

HITACHI

SERVICE MANUAL

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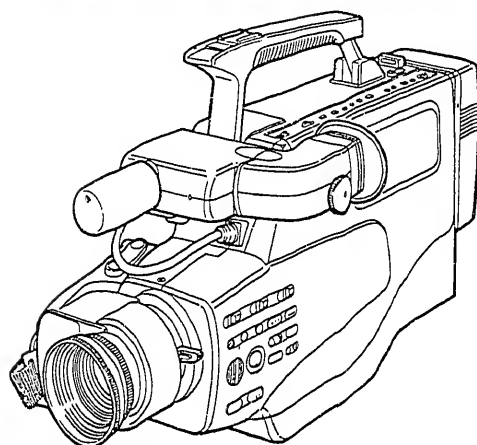
No. 3510E

VM-2400E,E(AV),E(UK)
VM-2480E(AV)

Technical Data

MANUAL RELATED TO THE VM-2400E/2480E

TITLE	MODEL	MANUAL No.
Technical Information	VM-2300E SERIES	No. 3233E
RF UNIT	VM-RF70E	No. 3073E
POWER ADAPTER /CHARGER	VM-AC61E	No. 3073E



VHS

This video deck is a VHS type video recorder. For proper operation, only the VHS type cassette must be used.

SPECIFICATIONS

■ General	
Power requirements	9.6V DC
Power consumption	9.4 watts (When AUTO/MAN FOCUS switch is "MAN".)
Dimensions	124(W) x 205(H) x 368(D) mm
Weight	2.2 kg
■ Video Recorder Section	
Format	VHS
Record/playback system	2 video record/playback heads
Video signal	PAL colour & CCIR monochrome signals 625 lines
Tape speed	23.39 mm/sec.
Video output	1.0 Vp p, 75 ohm
Mic input	-68 dBs, more than 1K ohm
Audio output	-8 dBs, less than 1K ohm
Earphone output	-26 dBs, 18 ohms terminal
Fast forward/rewind time	Less than 8 minutes with E-180 cassette
■ Camera Section	
Scanning	625 lines/50 fields/25 frames
Required minimum illumination	7 lux
Camera device	1/2" C.C.D
Lens diameter	46 mm

CAUTIONS ON LITHIUM BATTERY REPLACEMENT

Replace the lithium battery correctly, otherwise it may explode.
Do not replace the battery with one other than those specified by manufacturer (the same model or equivalent).

SAFETY PRECAUTIONS

- The following precautions should be observed when servicing.
1. Since many parts in the unit have special safety-related characteristics, always use genuine Hitachi replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers'. Critical parts are marked with Δ in the schematic diagram.
 2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safety operate without danger of electrical shock.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

VIDEO CAMERA / RECORDER

July

1991

TOKAI WORKS

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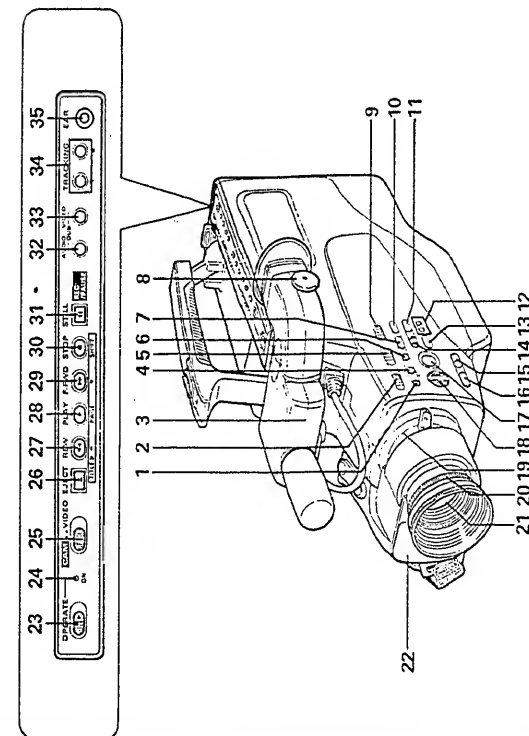
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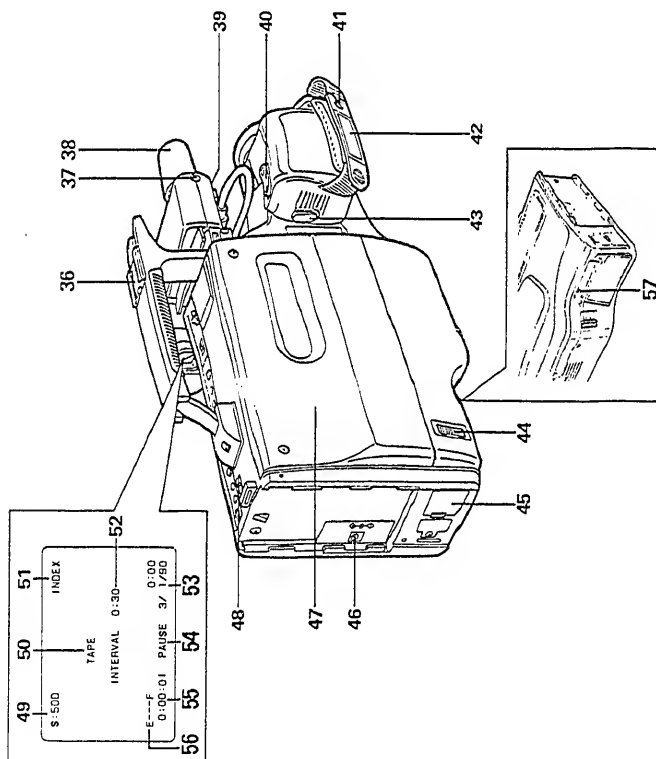
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- 1. DISPLAY Button**
Pressing this button once causes a 5 digit linear time counter and battery indicator to appear in the viewfinder. "M" appears in the display and it memorizes the amount of time remaining on the cassette in the camera/recorder.
Press a 3rd time to delete all displays.
- 2. SHUTTER Switch**
Used to control the shutter speed during recording and/or record/pause (stand-by) mode.
- 3. Record Indicator**
Flashes for about 10 seconds when the SELF TIMER switch is pressed during record/pause (stand-by) mode and stays on to indicate recording starts.
- 4. RESET/E-240 Button**
When the linear time counter is displayed in the viewfinder, pressing the button resets the counter to "0:00:00". When the time-remaining read out is displayed, pressing the button changes the display for extended length E-240 tapes, the indicator under the button will light.
- 5. TIME LAPSE Switch**
This switch allows time lapse and one shot recording.
- 6. MEMORY Button**
If this button is pressed while the linear time counter or time remaining read-out is displayed in the viewfinder, "M" appears in the display and it memorizes the tape position of "0:00:00".
- 7. REVIEW Button**
Used to review the last few seconds of the recorded segment in the record/pause mode.
- 8. Dipter Control**
To use the electronic viewfinder without eyeglasses on, turn this control knob for your optimum focus adjustment.
- 9. SELF TIMER Switch**
This switch allows you to start recording after about 10 seconds when the switch is pressed.
- 10. TITLE Button**
Press this button to create and record personalized titles on your videos with the camera/recorder's built-in titler.
- 11. INDEX Button**
When this button is pressed during a recording, the camera/recorder records an invisible index mark on the tape.
This is useful later when the tape is played back in your camera/recorder or a VTR that features the indexing system called "VHS Index Search System" because you will be able to quickly locate each index mark.

- 12. DATE/TIME Set Buttons**
These buttons are used to set the clock (time and date) in your camera/recorder so it can be recorded on your tapes for future reference.
- 13. DATE/TIME Button**
Press this button to display the date and clock in the viewfinder. Whenever the date and clock appear in the viewfinder, they will be recorded on the tape.
- 14. NEGA/POSI Switch**
Normally set to "POSI".
Switch to "NEGA" for special effects as in a negative film.
- 15. AUTO/MAN FOCUS Switch**
Set this switch to the "AUTO" position for automatic focusing, and to the "MAN" position for focusing with the focus ring.
- 16. PUSH AUTO Focus Button**
Auto focusing can be also performed during manual focus mode by pushing this button.
- 17. FADE Button**
During recording you can add a professional touch to your recordings by fading in and out of scenes.
NOTE: When you use FADE button to fade in and out, the sound will also fade in and out with the picture.
- 18. IRIS Control**
When this control is in the "AUTO" position, the iris is controlled automatically. Turn this control in the right or left for manual iris control.
- 19. Zoom Ring (Manual Zooming)**
The picture size can be magnified 6 times with the use of the zoom feature. Just rotate the zoom ring or a close up (11) or wide angle (20) picture. Macro close-up, as close as 1 cm from object, is feasible.
- 20. Focus Ring**
Do not attempt to manually turn the focus ring when the camera/recorder is in the auto focus mode.
- 21. Lens**
F1.4 (9 - 54 mm) 6:1 power zoom lens features with auto focus and auto iris functions.
- 22. Auto Focus Window**
To automatically focus the camera lens, this window transmits and receives infrared light which is reflected off the subject. Make sure you don't obstruct this window when recording.
- 23. OPERATE Switch**
Press this switch to turn camera/recorder on. Press again to turn camera/recorder off.
OPERATE light illuminates when this switch is pressed and camera/recorder is on.
- 24. OPERATE/Dew Indicator Light**
Flashing of the light indicates dew condensation on camera/recorder mechanism. While this light is flashing, the unit will not operate. If this occurs, eject the tape and leave the power on. When the light stops flashing, the unit can be operated.
- 25. VIDEO/CAM Select Switch**
This switch changes the camera/recorder to the record mode or to the playback mode. The switch must be in "CAM" position for recording.
- 26. EJECT Button**
Press to insert or remove the cassette.
- 27. REW Button**
Press this button during stop or fast forward mode and fast-rewinding starts. "REWIND" indication appears in the viewfinder whenever the linear time counter or time remaining is present. Press the button during playback of tape, and the tape is played back in the rewind direction approximately 3 times faster than the normal speed to confirm the recorded contents. Press PLAY button to return to normal playback mode or press STOP button to stop tape movement.
NOTE: You can also visually scan backward when the camera/recorder is record/pause (stand-by) mode by pressing and holding this button.
- 28. PLAY Button**
Used for playback of tape recorded in the SP mode.
NOTE: When the camera/recorder is record/pause (stand-by) mode, pressing and holding this button will play the tape at normal.
- 29. F.FWD Button**
Press this button during stop or rewind mode, and fast-forwarding starts. "FAST FWD" indication appears in the viewfinder whenever the linear time counter or time remaining is present. Press the button during playback of tape, and the tape is played back in the forward direction approximately 3 times faster than the normal speed to confirm the recorded content. Press PLAY button to return to normal playback mode or press STOP button to stop tape movement.
NOTE: You can also visually scan forward when the camera/recorder is record/pause (stand-by) mode by pressing and holding this button.
- 30. STOP Button**
The STOP button is used to stop playback, rewind, and fast forward operations. The STOP button has no effect during record operation.
- 31. STILL/REC/PAUSE Button**
When this button is pressed during recording, the tape stops and the camera/recorder enters the record/pause (stand-by) mode. When this button is pressed again, the tape runs to resume the still picture during playback mode.
- 32. AUDIO DUB Button**
This button is used to record new audio in place of existing audio without erasing the video.
- 33. VIDEO DUB Button**
This button is used to record new video in place of existing video without erasing the audio.
- 34. TRACKING Control**
Used when playing a tape recorded on another VTR. Adjust for best picture. Ejecting the cassette returns the tracking to the normal position.
- 35. EARPHONE Jack**
Sound being recorded by the microphone or played back may be monitored by earphone to this jack.



36. Accessory Shoe
Used to attach the optional camera light.
37. MIC Jack
Connect external microphone (Not supplied) here to record sound from the external microphone.
NOTE: Connecting an external microphone automatically switches off the built-in microphone.
38. Microphone
Sensitive to sounds coming from the direction in which the camera is pointed.
39. MIC NORMAL/WIND Switch
This switch is used to reduce noise that occurs due to wind. Place the switch in the "NORMAL" position for normal use.
40. Power Zoom Switch
This switch performs zooming electrically.
"W": Picture becomes wider gradually.
"T": Picture becomes telephoto gradually.

41. Lens Cap Tab
Place the lens cap on this tab when you are ready to record a scene. The tab also prevents the lens cap from swinging around on its cord.
42. Hand Strap
Adjust to best fit to your hand.
43. Record Start/Stop Button
This button is used to control the camera/recorder. When this button is pressed with the tape runs to start recording, the tape stops and the camera/recorder enters the record/pause (stand-by) mode.
44. AV OUT Jack
Connect the audio/video output cable to this jack and to the audio and video inputs of your TV/monitor for receiver. You may also connect the optional RF converter unit to this jack and your TV receiver.

45. Clock Battery Compartment
Pull the tab to open the cover and install the clock battery (provided).
46. DC IN 9.6V Jack
When using the AC adaptor/charger, connect one end of the DC cord (provided) to this jack and the other end to "DC OUTPUT" of the AC adaptor/charger. When using the car cord (optional), connect this jack and the car's cigarette lighter socket.
47. Cassette Holder
Press EJECT button to open the cassette holder. Insert the cassette in the direction when inserting. NOTE: Power source must be connected to open the cassette holder.
48. Battery Eject Lever
Release the battery attached to the video camera/recorder.
49. SHUTTER SPEED Indicator
Indicates the selected shutter speed.
50. TAPE Indicator
When the record start/stop button is pressed, if a cassette without its safety tab is inserted or there is no cassette, "TAPE" appears for several seconds. When the tape reaches near the end during shooting, "TAPE END" flashes.
51. INDEX Indicator
See page 19 for details.
52. INTERVAL Indicator
Appears in the time lapse and one-shot recording modes.
53. DATE/TIME Indicator
Indicates the date/clock during the record or record/pause (stand-by) mode. You can record the clock and/or date with object when recording.
54. MODE Indicator
Indicates the operating modes;
• "REC" appears during the record mode.
• "REWIND" appears during the rewind mode.
• "ASTPVD" appears during the fast forward mode.
• "PAUSE" appears during the record/pause (stand-by) mode.
55. LINEAR TIME COUNTER
Shows linear time counter and time remaining.
56. BATTERY Indicator
Indicates the battery condition;
• When the battery is fully charged, the display reads "E—F". When the battery is very near empty, only one dash remains. When the last dash starts blinking, you should find an alternative power source or recharge the battery.
57. MIC MIX (ON/OFF) Switch
This switch lets you add additional comments (or music) to a tape while you are copying a tape from your camera/recorder onto another VTR.

CHAPTER 2 DISASSEMBLY

1. CASE REMOVAL

1-1. Left Case

1. Turn the EVF neck in the direction of arrow (A). (See Fig. 2-1)
2. Remove nine (9) screws holding the left case.
3. Open the left case in the direction of arrow (B).

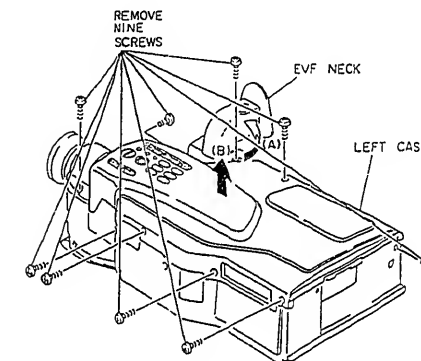


Fig. 2-1

1-2. Electronic Viewfinder (EVF)

ORDER FOR REMOVING PARTS	ITEM No.
• Left Case	1-1
• EVF	1-2

1. Move the EVF in the direction of arrow (A). (See Fig. 2-2)
2. While pulling the EVF shoe spring (1) in the direction of arrow (B), remove the EVF in the direction of arrow (A).
3. Remove one (1) screw and move the camera chassis in the direction of arrow (C) to release the EVF cable. (See Fig. 2-3)
4. Release two (2) tabs and open the main circuit board in the direction of arrow (D).
5. Disconnect connector CN401 on the main circuit board.

Note: When reinstalling the EVF, first attach the EVF shoe spring (1) to the EVF shoe.

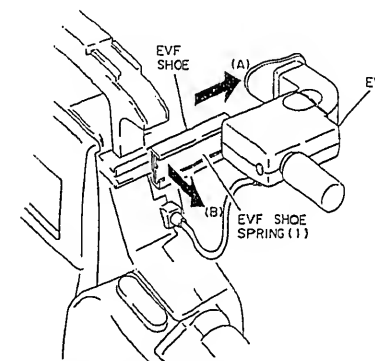


Fig. 2-2

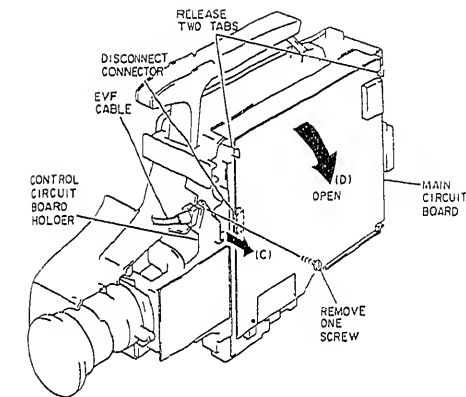


Fig. 2-3

1-3. Electronic Viewfinder (EVF) Shoe and Accessory Shoe

ORDER FOR REMOVING PARTS	ITEM No.
• Left Case	1-1
• EVF	1-2

1. Move the EVF shoe in the direction of arrow (A). (See Fig. 2-4)
 2. While pulling the EVF shoe spring (2) in the direction of arrow (B), remove the EVF shoe in the direction of arrow (A).
 3. Remove one (1) screw holding the accessory shoe spring.
 4. Lift up the accessory shoe spring and remove the accessory shoe spring in the direction of arrow (C).
 5. Remove two (2) screws holding the accessory shoe.
- Note: When reinstalling the EVF shoe, first attach the EVF shoe spring (2) to the EVF shoe.

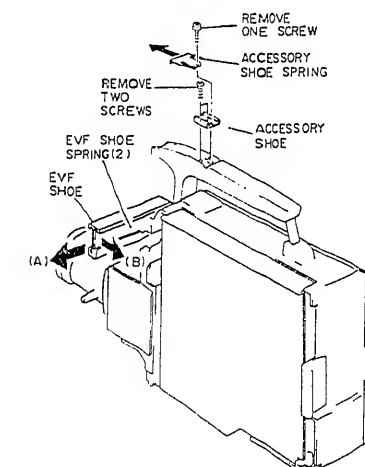


Fig. 2-4

- 1-4. Cassette Lid
1. Remove two (2) screws holding the cassette lid. (See Fig. 2-5)
 2. Remove the cassette lid in the direction of the arrow.

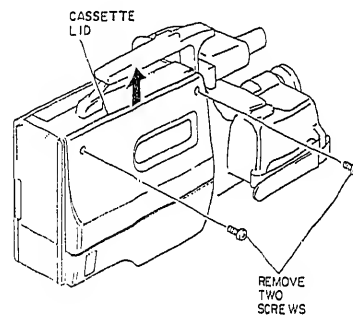


Fig. 2-5

1-5. Right Case

ORDER FOR REMOVING PARTS	ITEM No.
• Left Case	1-1
• EVF	1-2
• Cassette Lid	1-4

1. Open the main circuit board. (See Fig. 2-3)
2. Release one (1) tab and remove the batt. terminal circuit board in the direction of the arrow. (See Fig. 2-6)
3. Disconnect three (3) connectors (CN407, CN901, CN906) on the main circuit board.
4. Remove three (3) screws holding the right case. (See Fig. 2-7)
5. Pull the right case in the direction of arrow (A), and while releasing one (1) tab, remove the right case in the direction of arrow (B).

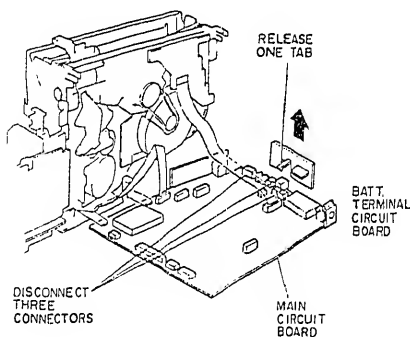


Fig. 2-6

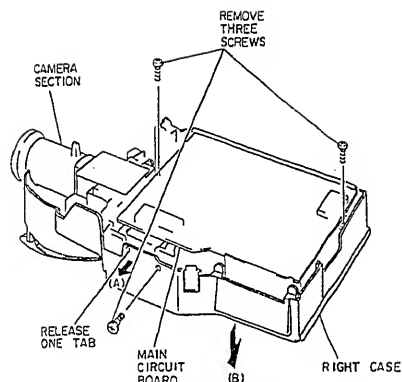


Fig. 2-7

1-6. Carrying Handle

ORDER FOR REMOVING PARTS	ITEM No.
• Left Case	1-1
• EVF	1-2
• Cassette Lid	1-4
• Right Case	1-5

2. Remove two (2) screws holding the carrying handle shoe. (See Fig. 2-8)
3. Remove one (1) screw holding the carrying handle.
4. While pulling the carrying handle shoe in the direction of arrow (B), remove the carrying handle in the direction of arrow (A).

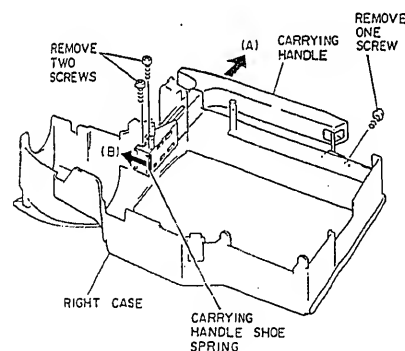


Fig. 2-8

2. CIRCUIT BOARD AND TAPE TRANSPORT MECHANISM REMOVAL

ORDER FOR REMOVING PARTS	ITEM No.
• Left Case	1-1
• EVF	1-2
• Cassette Lid	1-4
• Right Case	1-5

2-1. Main Circuit Board and Tape Transport Mechanism

1. Release two (2) tabs and open the main

- circuit board in the direction of the arrow. (See Fig. 2-9)
2. Disconnect two (2) connectors (CN905, CN910) holding the camera section and VTR section. (See Fig. 2-10)
3. Disconnect five (5) connectors (CN402, CN403, CN602, CN904, CN912).
4. Disconnect three (3) flat cables (CN201, CN601, CN903).
5. Release two (2) tabs holding the main circuit board. (See Fig. 2-9)
6. Remove one (1) screw holding the ground cable. (See Fig. 2-11)

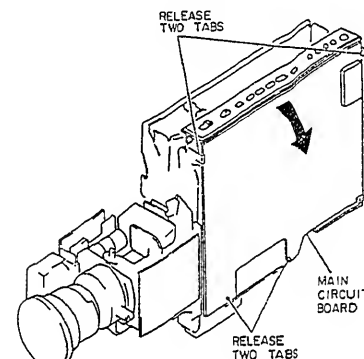


Fig. 2-9

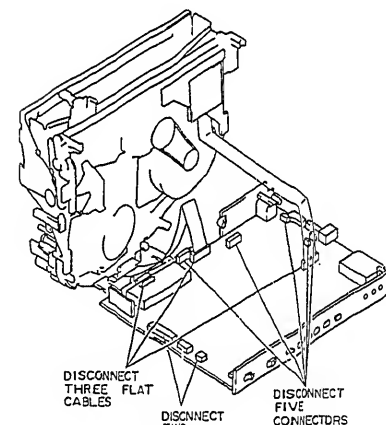


Fig. 2-10

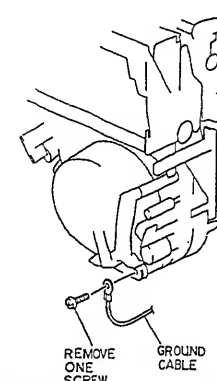


Fig. 2-11

2-2. Auto Focus Circuit Board

1. Release three (3) tabs holding the auto focus circuit board. (See Fig. 2-12)
2. Disconnect seven (7) connectors (CN01AF, CN02AF, CN03AF, CN04AF, CN05AF, CN06AF, CN07AF) on the auto focus circuit board.

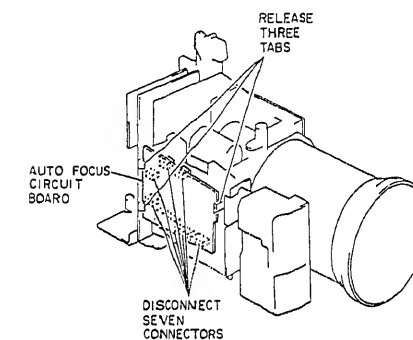


Fig. 2-12

2-3. Control Circuit Board

1. Disconnect two (2) connectors (CN601, CN910). (See Fig. 2-13)
2. Release three (3) tabs holding the control circuit board.

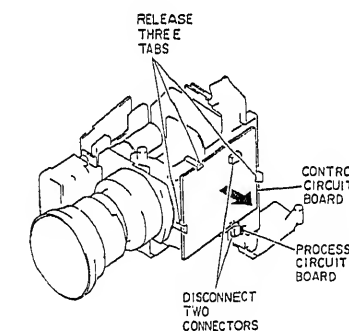


Fig. 2-13

2-4. Process Circuit Board

1. Pull the process circuit board in the direction of arrow disconnect two (2) connectors (CN101, CN102) between the sensor circuit board. (See Fig. 2-14)
2. Disconnect four (4) connectors (CN203, CN204, CN205, CN206) on the process circuit board.

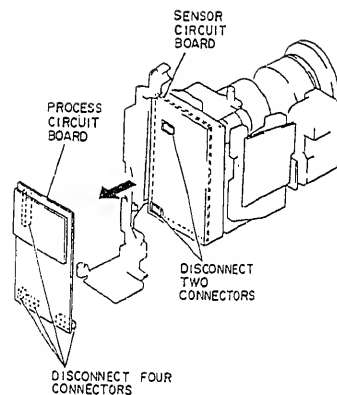


Fig. 2-14

2-5. DC-DC Converter

1. Disconnect connector CN205 from the process circuit board. (See Fig. 2-15)
2. Release one (1) tab and pull out the DC-DC converter circuit board from its holder in the direction of arrow.

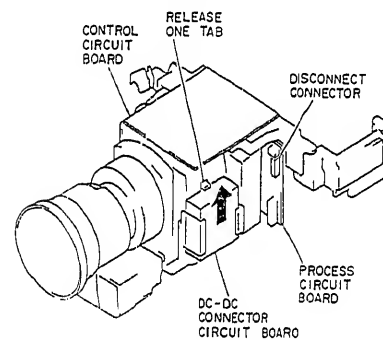


Fig. 2-15

2-6. Sensor Circuit Board

ORDER FOR REMOVING PARTS	ITEM No..
• Process Circuit Board	2-4

1. Remove one (1) screw holding the sensor shield cover. (See Fig. 2-16)
2. Remove three (3) screws holding the sensor circuit board.
3. Pull out the sensor circuit board in the direction of arrow.

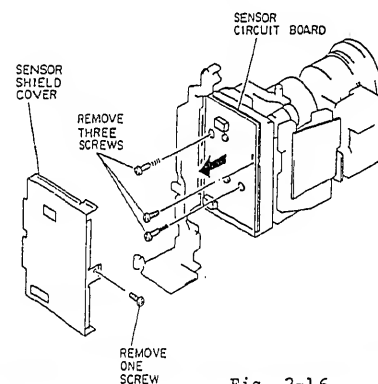


Fig. 2-16

2-7. Back-up Circuit Board and Batt. Terminal Circuit Board

1. Unsolder connector CN902 on the batt. terminal circuit board. (See Fig. 2-17)
2. Remove one (1) screw holding the fuse cover. (See Fig. 2-18)
3. Open the covers back-up battery and fuse remove them in the direction of arrow.
4. Remove the back-up circuit board in the direction of arrow.
5. Disconnect connector CN906 on the back-up circuit board.

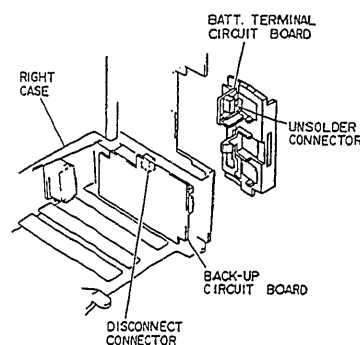


Fig. 2-17

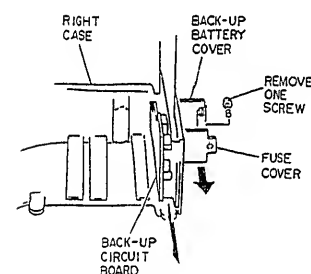


Fig. 2-18

2-8. Light Terminal Circuit Board

ORDER FOR REMOVING PARTS	ITEM No..
• Accessory Shoe	1-3
• Carrying Handle	1-6

1. Remove one (1) screw holding light terminal circuit board. (See Fig. 2-19)
2. Remove front cover in the direction of arrow (A).
3. Remove slide cover in the direction of arrow (B).

Note: When the light terminal slide cover is removed, the spring of the light terminal slide cover will come off.

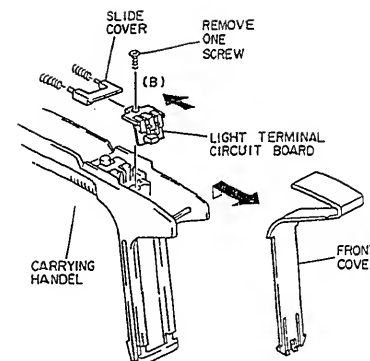


Fig. 2-19

MAIN MECHANICAL COMPONENTS IDENTIFICATIONS (TOP VIEW)

1. Cylinder Brush
2. Upper Cylinder (Video Head)
3. Guide Roller Rail
4. X-Value Adjust Nut
5. Take-up Guide Roller
6. Audio/Control (A/C) Head
7. Take-up Guide Pole
8. Half Loading Arm
9. Pressure Roller Assembly
10. Take-up Guide Arm
11. Take-up End Sensor
12. End LED
13. Take-up Reel Disk
14. Cassette Holder Lock Slider
15. Reel Gear Block
16. Supply Reel Disk
17. Tension Band
18. Tension Arm
19. Supply Guide Roller
20. Supply End Sensor
21. Supply Guide Post
22. Supply Guide Pole
23. Full Erase (FE) Head
24. Impedance Roller

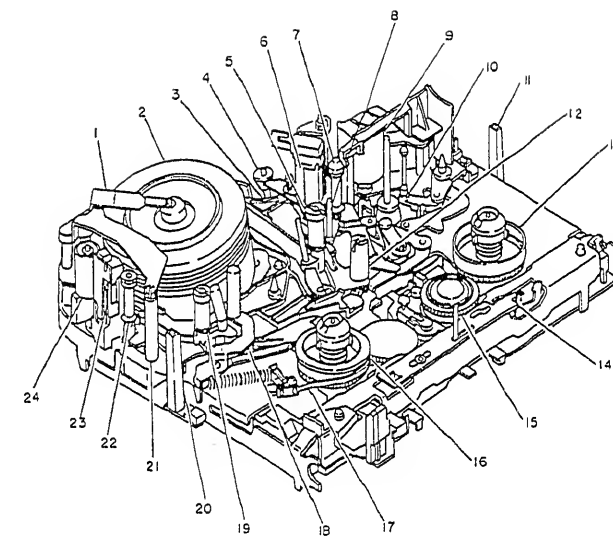


Fig. 2-20

MAIN MECHANICAL COMPONENTS IDENTIFICATIONS (BOTTOM VIEW)

1. Lower Cylinder (Cylinder Motor Assembly)
2. Supply Loading Cam Gear
3. Cam Gear Plate
4. Mechanism State Switch
5. Tension Pole Drive Arm
6. Loading Motor
7. Supply Sensor Circuit Board
8. Loading Gear
9. Driving Gear
10. Take-up Sensor Circuit Board
11. Capstan Motor
12. Take-up Loading Cam Gear

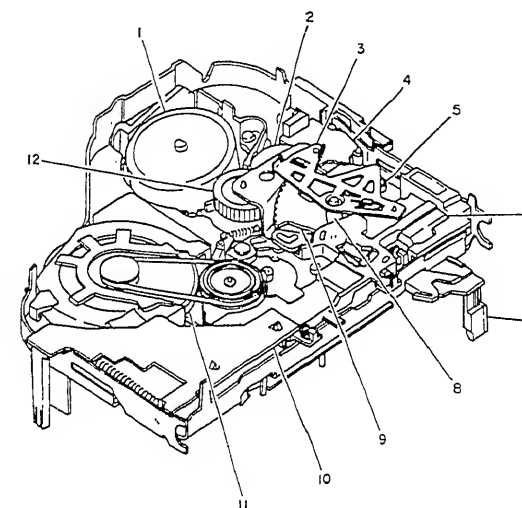


Fig. 2-21

3. MAIN MECHANICAL COMPONENTS REMOVAL

Reinstall the components by the reverse procedure to removal when no caution items are given.

ORDER FOR REMOVING PARTS	ITEM.No.
• Tape Transport Mechanism	2-10

3-1. Cassette Holder and Supply Sensor Circuit Board

1. Disconnect connector CN001. (See Fig. 2-51)
2. Remove one (1) screw holding the supply sensor circuit board.
3. Release one (1) tab and lift up the cassette holder. (See Fig. 2-52)
4. Remove the supply sensor circuit board in the direction of the arrow. (See Fig. 2-51)
5. Remove two (2) screws holding the cassette holder and cassette holder spring. (See Fig. 2-53)
6. Remove one (1) screw holding the cassette holder and chassis holder. (See Fig. 2-54)
7. Move the front arm of the cassette holder in the direction of arrow (A). (See Figs. 2-53, 2-54)
8. Move the rear arm of the cassette holder in the direction of arrow (B). (See Figs. 2-53, 2-54)

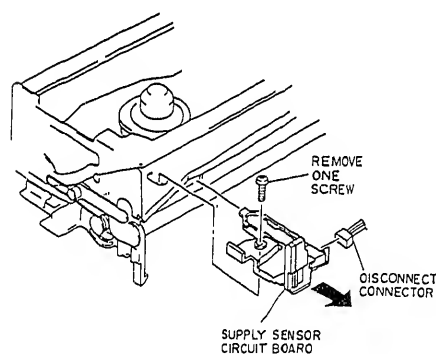


Fig. 2-51

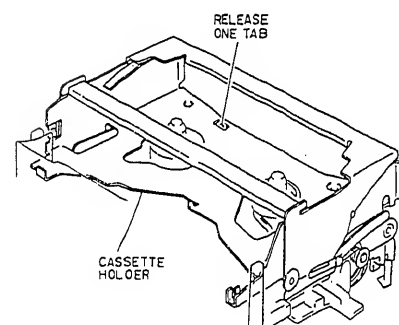


Fig. 2-52

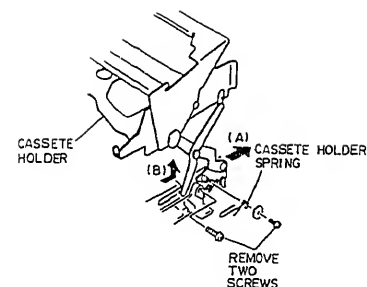


Fig. 2-53

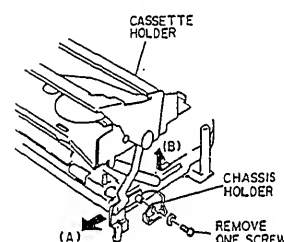


Fig. 2-54

3-2. Upper Cylinder (Video Head)

1. Remove one (1) screw holding the cylinder discharge brush and cylinder shield. (See Fig. 2-55)
 2. Remove two (2) screws holding the upper cylinder and pull out the upper cylinder from the lower cylinder.
- Note: Be careful that your fingers or tools do not touch the video head tips during work.

Upon reinstallation, align the video heads connected to the connector (blue) of the upper cylinder with the arrow mark on the lower cylinder. (See Fig. 2-56) Install the upper cylinder by the reverse procedure to removal. Tighten two (2) upper cylinder holding screws alternately. Adjust as follows after installing the cylinder assembly.

- * CHAPTER 3
- 2-6. ADJUSTMENT AFTER REPLACING THE CYLINDER.

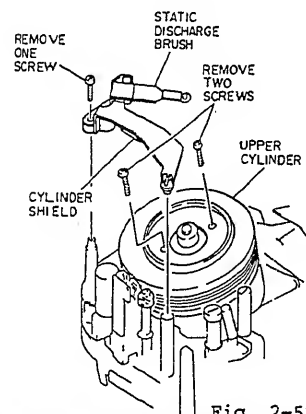


Fig. 2-55

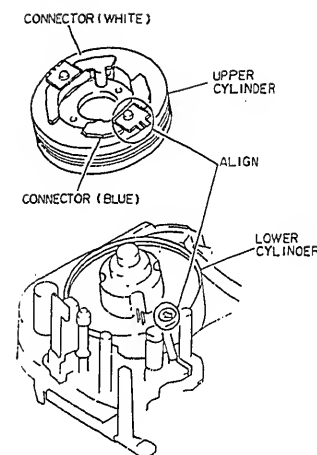


Fig. 2-56

3-3. Audio/Control (A/C) Head

1. Disconnect connector CN402. (See Fig. 2-57)
2. Remove two (2) screws holding the A/C head.

Note: Adjust as follows after installing the Audio/Control Head.

- * CHAPTER 3
- 2-5. A/C HEAD ADJUSTMENT
- * CHAPTER 4
- 3-8. AUDIO SECTION
- 1) Audio Bias Level Adjustment.

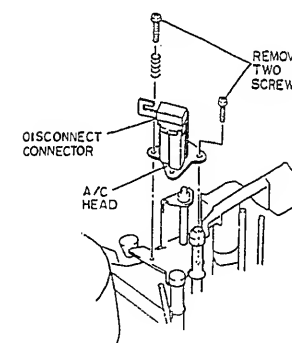


Fig. 2-57

3-4. Full Erase (FE) Head

1. Disconnect connector CN403. (See Fig. 2-58)
2. Remove one (1) screw holding the FE head base.
3. Release two (2) tabs holding the FE head and remove the FE head in the direction of the arrow.

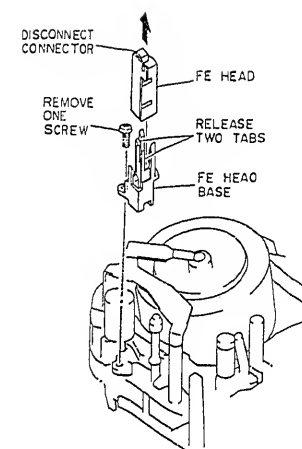


Fig. 2-58

3-5. Dew Sensor

1. Disconnect connector CN002 on the take-up sensor circuit board.
2. Release one (1) tab holding the dew sensor. (See Fig. 2-59)
3. Remove the dew sensor in the direction of the arrow from the pressure roller holder.

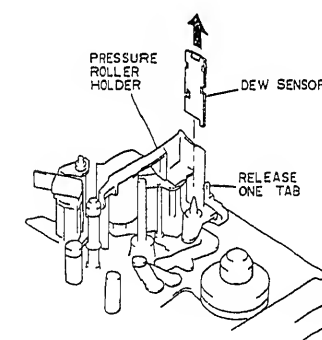


Fig. 2-59

3-6. Supply End Sensor and Mechanism State Switch

1. Disconnect connector CN001 on the supply end sensor. (See Fig. 2-60)
2. Disconnect connector CN001 on the mechanism state switch.
3. Release two (2) tabs of the supply end sensor.
4. Remove the supply end sensor.
5. Remove one (1) screw holding the mechanism state switch.
6. Remove the mechanism state switch.

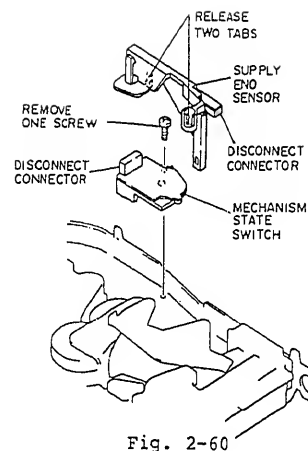


Fig. 2-60

- 3-7. Take-up Sensor Circuit Board (Take-up Reel Sensor/Take-up End Sensor/Cassette Holder Switch)
1. Remove two (2) screws holding the take-up sensor circuit board. (See Fig. 2-61)
 2. Release three (3) tabs and open the take-up sensor circuit board.
 3. Disconnect two (2) connectors (CN001) from the supply sensor circuit board and supply end sensor circuit board. (See Fig. 2-62)
 4. Disconnect connector CN001 from the mechanism state switch and release the wires from the wire retainers. (See Fig. 2-63)
 5. Disconnect connector CN002 on the take-up sensor circuit board.

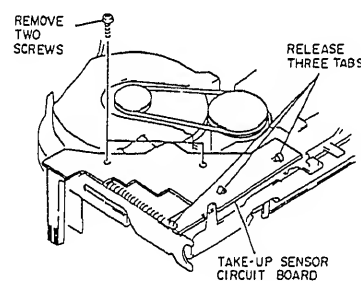


Fig. 2-61

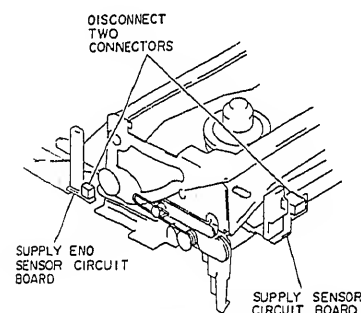


Fig. 2-62

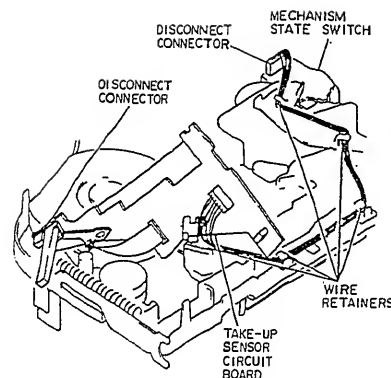


Fig. 2-63

- 3-8. Lower Cylinder (Cylinder Motor Assembly)

ORDER FOR REMOVING PARTS	ITEM No.
• Upper Cylinder	3-2

1. Remove three (3) screws holding the lower cylinder. (See Fig. 2-64)

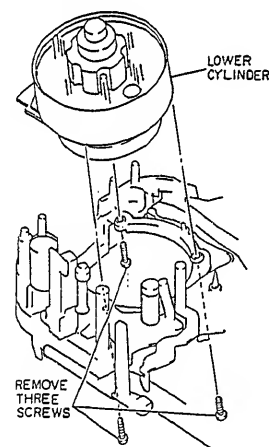


Fig. 2-64

- 3-9. Capstan Motor

1. Move the take-up guide arm in the direction of the arrow (pressure roller side). (See Fig. 2-65)
2. Remove three (3) screws holding the capstan motor.
3. Disconnect connector CN1M on the capstan motor. (See Fig. 2-66)
4. Remove the capstan belt from the capstan motor.
5. Release three (3) tabs holding the capstan motor cover and capstan motor.
6. Release three (3) tabs and remove the capstan motor cover.

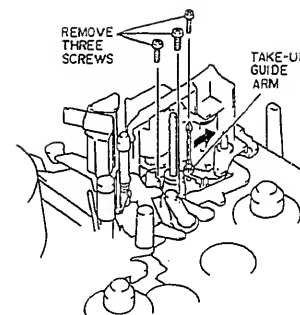


Fig. 2-65

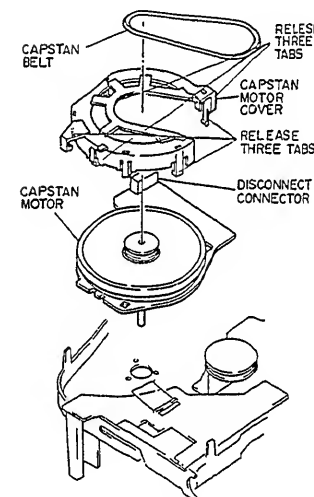


Fig. 2-66

- 3-10. Impedance Roller

1. Remove one (1) washer and pull out the impedance roller. (See Fig. 2-67)
- Note: Be careful that your fingers do not touch the roller during work.

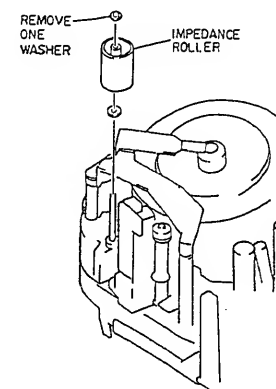


Fig. 2-67

- 3-11. Pressure Roller Assembly

ORDER FOR REMOVING PARTS	ITEM No.
• Cassette Holder and Supply Sensor Circuit Board	3-1
• Dew Sensor	3-5

1. Remove two (2) screws holding the pressure roller holder. (See Fig. 2-68)
2. Pull out the pressure roller assembly from the chassis.

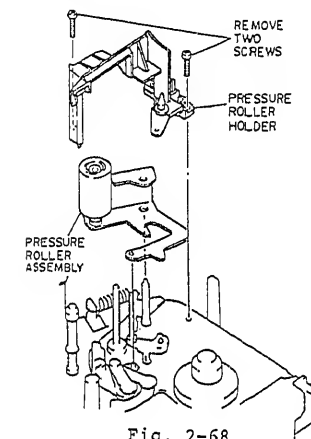


Fig. 2-68

- 3-12. Tension Arm and Tension Band

ORDER FOR REMOVING PARTS	ITEM No.
• Cassette Holder and Supply Sensor Circuit Board	3-1

1. Remove one (1) tab of the supply end sensor. (See Fig. 2-69)
2. Release the tension spring.
3. Remove one (1) screw holding the tension band.
4. Move the supply sub brake in the direction of the arrow.
5. Remove the tension arm and tension band from the chassis.
6. Release one (1) tab and remove the tension band from the tension arm.

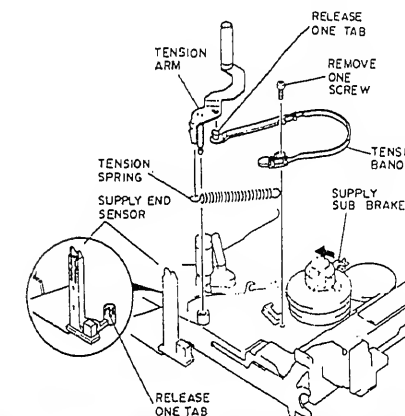


Fig. 2-69

3-13. Supply Reel Disk

ORDER FOR REMOVING PARTS	ITEM No.
• Cassette Holder and Supply Sensor Circuit Board	3-1
• Tension Arm and Tension Band	3-12

1. Remove one (1) washer holding the supply reel disk. (See Fig. 2-70)
2. Move the supply sub brake in the direction of the arrow.
3. Pull out the supply reel disk from the chassis.

Note: Take care not to lose the washer in the lower section.
Adjust as follows after installing the supply reel disk.

* CHAPTER 3

2-1. REEL DISK HEIGHT ADJUSTMENT

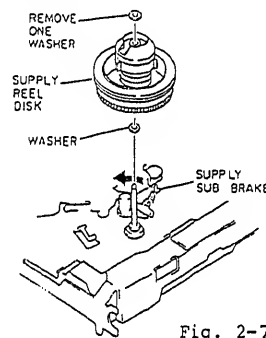


Fig. 2-70

3-14. Take-up Reel Disk

ORDER FOR REMOVING PARTS	ITEM No.
• Cassette Holder and Supply Sensor Circuit Board	3-1

1. Remove one (1) washer holding the take-up reel disk. (See Fig. 2-71)
2. Pull out the take-up reel disk from the chassis.

Note: Take care not to lose the washer in the lower section.
Adjust as follows after installing the take-up reel disk.

* CHAPTER 3

2-1. REEL DISK HEIGHT ADJUSTMENT

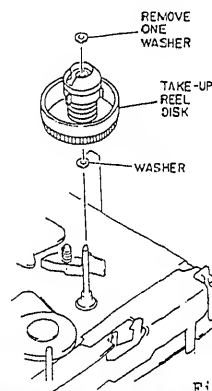


Fig. 2-71

3-15. Take-up Sub Brake

ORDER FOR REMOVING PARTS	ITEM No.
• Cassette Holder and Supply Sensor Circuit Board	3-1

1. Remove the spring between the chassis and take-up sub brake. (See Fig. 2-72)
2. Release one (1) tab and pull out the take-up sub brake from the chassis.

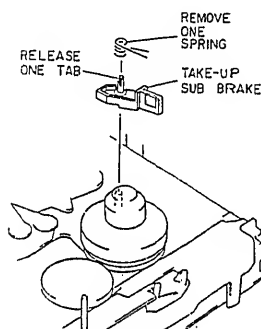


Fig. 2-72

3-16. Supply Guide Pole

1. Turn the upper section of the supply guide pole using the hexagonal box wrench (5.0mm) to remove the supply guide pole. (See Fig. 2-73)
- Note: Adjust as follows after installing the supply guide pole.

* CHAPTER 3

2-3. SUPPLY AND TAKE-UP GUIDE POLE HEIGHT ADJUSTMENT

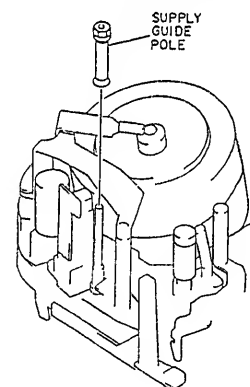


Fig. 2-73

3-17. Supply Guide Roller

1. Remove one (1) hex screw holding the supply guide roller. (See Fig. 2-74)
2. Turn the upper section of the supply guide roller using a flat-head driver to remove the supply guide roller from the supply guide roller base.

Note: Adjust as follows after installing the supply guide roller.

* CHAPTER 3

2-4. SUPPLY/TAKE-UP GUIDE ROLLER HEIGHT ADJUSTMENT

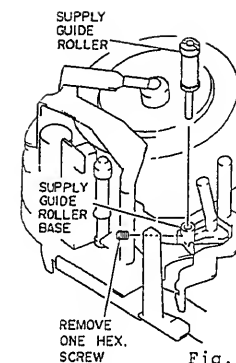


Fig. 2-74

3-18. Take-up Guide Roller

1. Remove one (1) hex screw holding the take-up guide roller. (See Fig. 2-75)
2. Turn the upper section of the take-up guide roller using a flat-head driver to remove the take-up guide roller from the take-up guide roller base.

Note: Adjust as follows after installing the take-up guide roller.

* CHAPTER 3

2-4. SUPPLY/TAKE-UP GUIDE ROLLER HEIGHT ADJUSTMENT

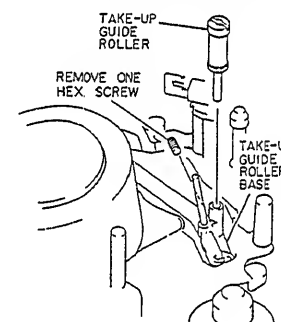


Fig. 2-75

3-19. A/C Head Base

ORDER FOR REMOVING PARTS	ITEM No.
• A/C Head	3-3

1. Remove one (1) nut holding the A/C head base. (See Fig. 2-76)
2. Pull out the A/C head base together with the spring.

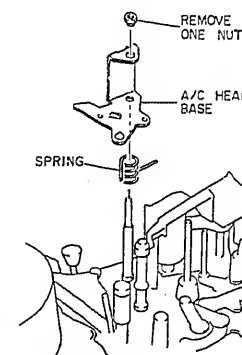


Fig. 2-76

3-20. Take-up Guide Pole, Half Loading Arm and Half Loading Control Arm

ORDER FOR REMOVING PARTS	ITEM No.
• A/C Head Base	3-19

1. Turn the upper section of the take-up guide pole using the hexagonal box wrench (5.0mm) to remove the take-up guide pole. (See Fig. 2-77)
 2. Remove one (1) washer holding the half loading control arm.
 3. Pull out the half loading arm and half loading control arm from the chassis.
- Note: Adjust as follows after installing the take-up guide pole.

* CHAPTER 3

2-3. SUPPLY AND TAKE-UP GUIDE POLE HEIGHT ADJUSTMENT

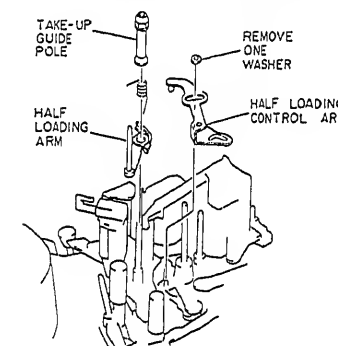


Fig. 2-77

3-21. Supply Guide Roller Base, Take-up Guide Roller Base, Guide Roller Rail and End Lamp Removal

ORDER FOR REMOVING PARTS	ITEM No.
• Cassette Holder and Supply Sensor Circuit Board	3-1
• A/C Head	3-3
• FE Head	3-4
• Impedance Roller	3-10
• Tension Arm and Tension Band	3-12
• Supply Guide Roller	3-17
• Take-up Guide Roller	3-18
• A/C Head Base	3-19
• Take-up Guide pole, Half Loading Arm and Half Loading Control Arm	3-20

1. Remove one (1) screw holding the cylinder brush and cylinder shield. (See Fig. 2-78)
2. Remove three (3) screws holding the cylinder assembly. (See Fig. 2-79)
3. Remove three (3) screws holding the guide roller rail. (See Fig. 2-78)
4. Release eight (8) tabs and remove the guide roller rail together with the supply guide roller base, take-up guide roller base and end lamp.
5. Remove the end lamp in the direction of the arrow from the guide roller rail.

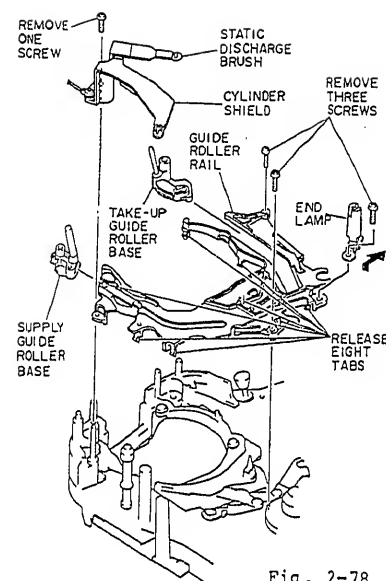


Fig. 2-78

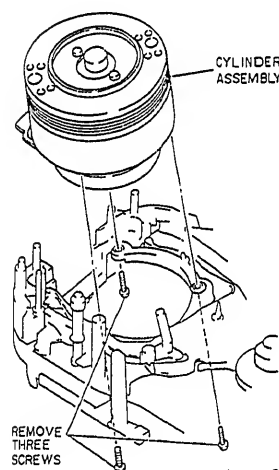


Fig. 2-79

3-22. Supply Sub Brake

ORDER FOR REMOVING PARTS	ITEM No.
• Cassette Holder and Supply Sensor Circuit Board	3-1
• A/C Head	3-3
• FE Head	3-4
• Impedance Roller	3-10
• Tension Arm and Tension Band	3-12
• Supply Guide Roller	3-17
• Take-up Guide Roller	3-18
• A/C Head Base	3-19
• Take-up Guide pole, Half Loading Arm and Half Loading Control Arm	3-20
• Supply Guide Roller Base, Take-up Guide Roller Base, Guide Roller Rail and End Lamp.	3-21

1. Release the spring between the supply sub brake and chassis. (See Fig. 2-90)
2. Pull out the supply sub brake from the chassis.

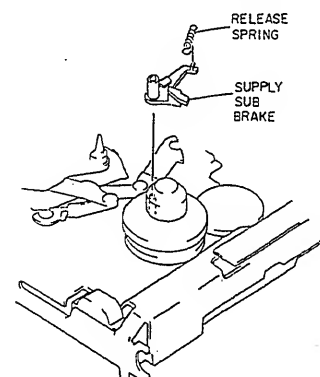


Fig. 2-80

3-23. Cylinder Base

ORDER FOR REMOVING PARTS	ITEM No.
• Cassette Holder and Supply Sensor Circuit Board	3-1
• A/C Head	3-3
• FE Head	3-4
• Impedance Roller	3-10
• Tension Arm and Tension Band	3-12
• Supply Guide Roller	3-17
• Take-up Guide Roller	3-18
• A/C Head Base	3-19
• Take-up Guide pole, Half Loading Arm and Half Loading Control Arm	3-20
• Supply Guide Roller Base, Take-up Guide Roller Base, Guide Roller Rail and End Lamp.	3-21

1. Remove three (3) screws holding the cylinder base. (See Fig. 2-81)

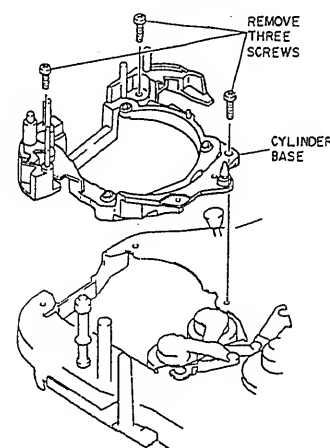


Fig. 2-81

3-24. Supply Loading Cam Gear and Take-up Loading Cam Gear

ORDER FOR REMOVING PARTS	ITEM No.
• Cassette Holder and Supply Sensor Circuit Board	3-1
• A/C Head	3-3
• FE Head	3-4
• Impedance Roller	3-10
• Tension Arm and Tension Band	3-12
• Supply Guide Roller	3-17
• Take-up Guide Roller	3-18
• A/C Head Base	3-19
• Take-up Guide pole, Half Loading Arm and Half Loading Control Arm	3-20
• Supply Guide Roller Base, Take-up Guide Roller Base, Guide Roller Rail and End Lamp.	3-21
• Cylinder Base	3-23

1. Remove the supply loading cam gear and take-up loading cam gear. (See Fig. 2-82)

Note: Adjust as follows after installing the supply and take-up loading cam gears.

* CHAPTER #
1-1. LOADING CAM GEARS (SUPPLY/TAKE-UP) ADJUSTMENT

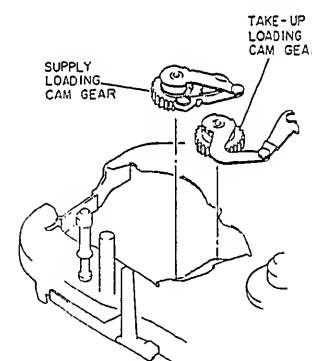


Fig. 2-82

3-25. Take-up Guide Arm

ORDER FOR REMOVING PARTS	ITEM No.
• Cassette Holder and Supply Sensor Circuit Board	3-1
• Dew Sensor	3-5
• Pressure Roller Assembly	3-11

1. Release the spring between the take-up guide arm and chassis. (See Fig. 2-83)
2. Pull out the take-up guide arm from the chassis.

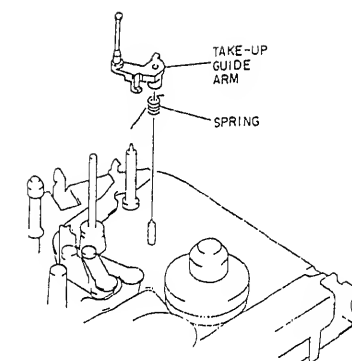


Fig. 2-83

3-26. Pressure Roller Control Arm

ORDER FOR REMOVING PARTS	ITEM No.
• Cassette Holder and Supply Sensor Circuit Board	3-1
• Dew Sensor	3-5
• Pressure Roller Assembly	3-11
• Take-up Guide pole, Half Loading Arm and Half Loading Control Arm	3-20

1. Release the spring between the pressure roller control arm and chassis. (See Fig. 2-84)
2. Pull out the pressure roller control arm from the chassis.

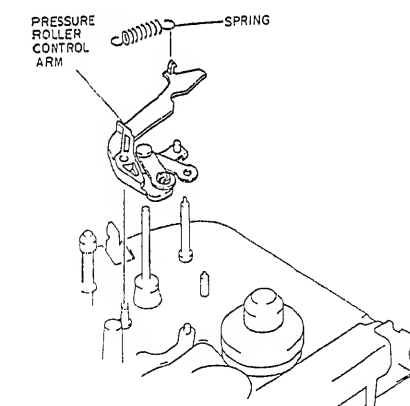


Fig. 2-84

3-27. Cassette Holder Lock Slider

ORDER FOR REMOVING PARTS	ITEM No.
• Cassette Holder and Supply Sensor Circuit Board	3-1

1. Remove one (1) washer and release one (1) tab holding the cassette holder lock slider. (See Fig. 2-85)

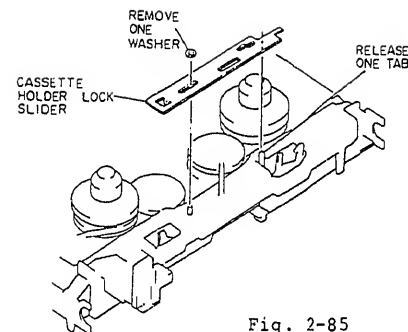


Fig. 2-85

3-28. Reel Gear Block and Loading Motor

ORDER FOR REMOVING PARTS	ITEM No.
• Take-up Sensor Circuit Board	3-7

1. Remove the capstan belt from the reel gear block. (See Fig. 2-86)
2. Remove one (1) screw holding the cam gear plate.
3. Remove three (3) screws holding the reel gear block.
4. Release three (3) tabs holding the loading motor. (See Fig. 2-87)

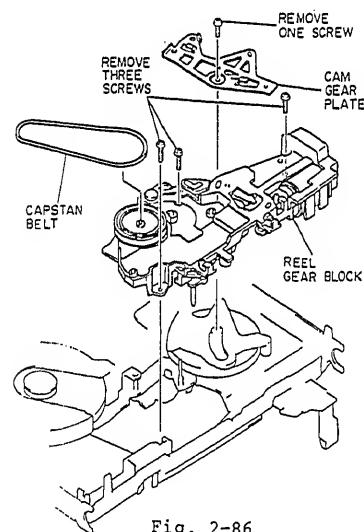


Fig. 2-86

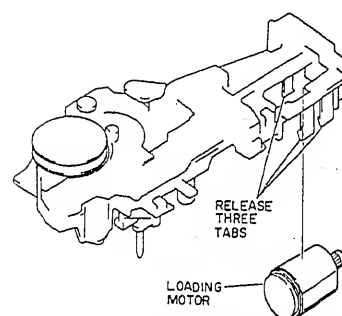


Fig. 2-87

3-29. Loading Gear

ORDER FOR REMOVING PARTS	ITEM No.
• Take-up Sensor Circuit Board	3-7
• Reel Gear Block	3-28

1. Pull out the loading gear from the chassis. (See Fig. 2-88)

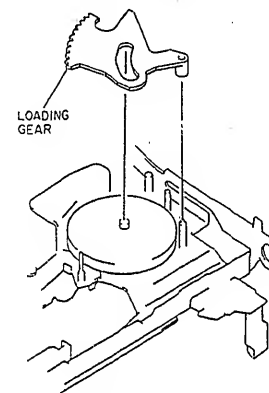


Fig. 2-88

3-30. Tension Pole Drive Arm

ORDER FOR REMOVING PARTS	ITEM No.
• Cam Gear Plate	3-28

1. Pull out the tension pole drive arm from the chassis. (See Fig. 2-89)

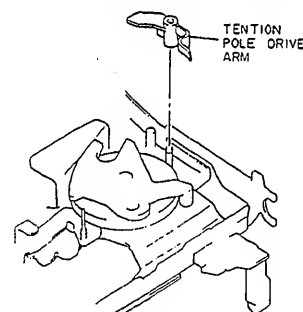


Fig. 2-89

3-31. Driving Gear

ORDER FOR REMOVING PARTS	ITEM No.
• Take-up Sensor Circuit Board	3-7
• Reel Gear Block	3-28
• Loading Gear	3-29
• Tension Pole Drive Arm	3-30

1. Pull out the driving gear from the chassis. (See Fig. 2-90)
- Note: Adjust as follows after installing the driving gear.
- * CHAPTER 3
1-2. MECHANISM STATE SWITCH AND DRIVING GEAR ADJUSTMENT.

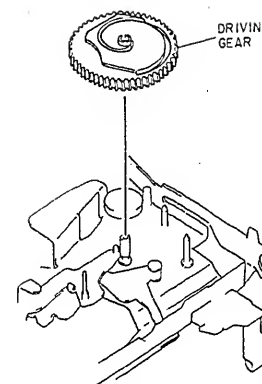


Fig. 2-90

3-32. Relay Gear

ORDER FOR REMOVING PARTS	ITEM No.
• Mechanism State Switch	3-6
• Take-up Sensor Circuit Board	3-7
• Reel Gear Block	3-28
• Loading Gear	3-29
• Tension Pole Drive Arm	3-30
• Driving Gear	3-31

1. Pull out the relay gear from the chassis. (See Fig. 2-91)

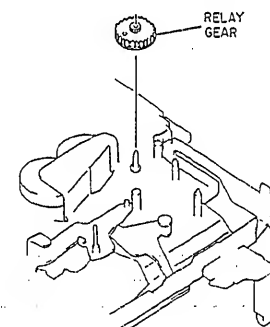


Fig. 2-91

3-33. Cassette Holder Lock

ORDER FOR REMOVING PARTS	ITEM No.
• Take-up Sensor Circuit Board	3-7
• Reel Gear Block	3-28

1. Remove one (1) screw holding the cassette holder lock. (See Fig. 2-92)
2. Release one (1) tab and remove the cassette holder lock.

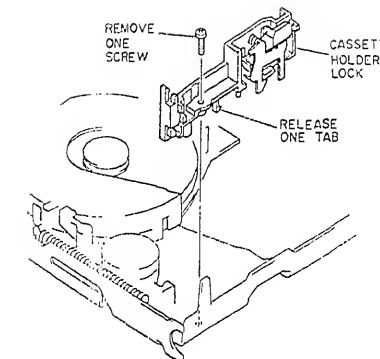


Fig. 2-92

3-34. Cassette Holder Damper

ORDER FOR REMOVING PARTS	ITEM No.
• Take-up Sensor Circuit Board	3-7
• Reel Gear Block	3-28
• Cassette Holder Lock	3-33

1. Remove the cassette holder damper in the direction of the arrow. (See Fig. 2-93)

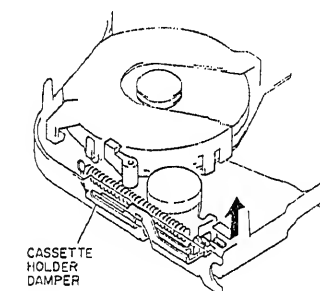


Fig. 2-93

3-35. Cam Gear Arm

ORDER FOR REMOVING PARTS	ITEM No.
• Take-up Sensor Circuit Board	3-7
• Capstan Motor	3-9
• Reel Gear Block	3-28
• Loading Gear	3-29
• Tension Pole Drive Arm	3-30
• Driving Gear	3-31

1. Move the cam gear arm in the direction of the arrow. (See Fig. 2-94)
2. Pull out the cam gear arm from the chassis.

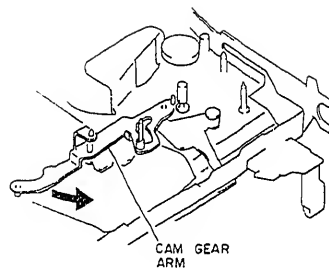


Fig. 2-94

3-36. Cassette Holder Lock Drive Arm

ORDER FOR REMOVING PARTS	ITEM No.
• Take-up Sensor Circuit Board	3-7
• Reel Gear Block	3-28
• Loading Gear	3-29
• Tension Pole Drive Arm	3-30
• Driving Gear	3-31
• Cam Gear Arm	3-35

1. Release the spring between the cassette holder lock drive arm and chassis. (See Fig. 2-95)
2. Pull out the cassette holder lock drive arm from the chassis.

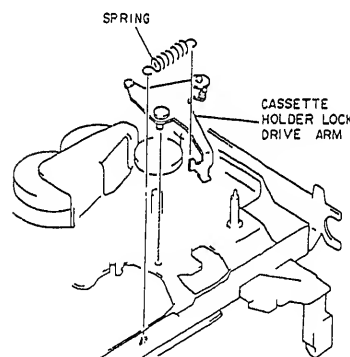


Fig. 2-95

4. LENS BLOCK REMOVAL

ORDER FOR REMOVING PARTS	ITEM No.
• Left Case	1-1
• EVF	1-2
• Cassette Lid	1-4
• Right Case	1-5

4-1. Lens Block

ORDER FOR REMOVING PARTS	ITEM No.
• Auto Focus Circuit Board	2-2
• Control Circuit Board	2-3
• Process Circuit Board	2-4
• DC-DC Converter	2-5
• Sensor Circuit Board	2-6

1. Remove one (1) screw holding the control circuit board holder. (See Fig. 2-101)
2. Release two (2) tabs and remove the control circuit board holder. (See Fig. 2-102)
3. Remove one (1) screw and the auto focus circuit board holder in the direction of arrow.

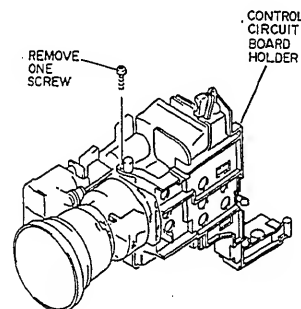


Fig. 2-101

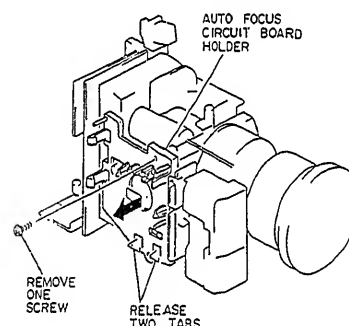


Fig. 2-102

4-2. Focus Motor

ORDER FOR REMOVING PARTS	ITEM No.
• Lens Block	4-1

1. Remove one (1) screw holding the focus motor. (See Fig. 2-103)
2. Remove the focus motor in the direction of the arrow.

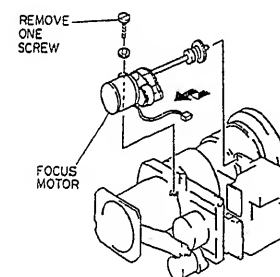


Fig. 2-103

4-3. Zoom Motor

ORDER FOR REMOVING PARTS	ITEM No.
• Lens Block	4-1

1. Remove one (1) screw holding the zoom motor. (See Fig. 2-104)
2. Remove the zoom motor in the direction of the arrow.

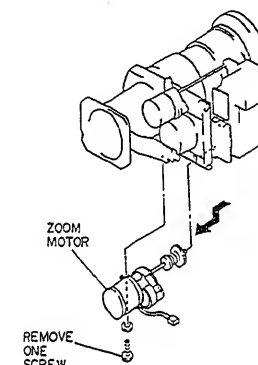


Fig. 2-104

4-4. Iris Block

ORDER FOR REMOVING PARTS	ITEM No.
• Lens Block	4-1

1. Remove the iris block in the direction of the arrow. (See Fig. 2-105)

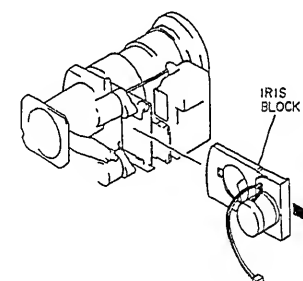


Fig. 2-105

5. ELECTRONIC VIEWFINDER (EVF) REMOVAL

ORDER FOR REMOVING PARTS	ITEM No.
• EVF	1-2

5-1. Bottom Case

1. Remove one (1) screw holding the EVF cable holder. (See Fig. 2-151)
2. Remove the EVF cable holder in the direction of arrow (A).
3. Remove one (1) screw holding the bottom case.
4. Remove the bottom case in the direction of arrow (B).

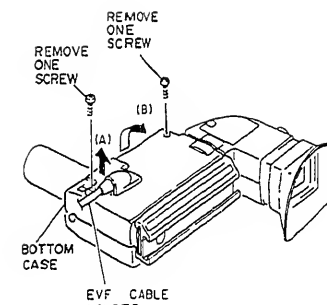


Fig. 2-151

5-2. Electronic Viewfinder (EVF) Circuit Board

ORDER FOR REMOVING PARTS	ITEM No.
• Bottom Case	5-1

1. Remove one (1) screw holding the EVF shield. (See Fig. 2-152)
2. Remove the EVF circuit board, MIC circuit board, indi. circuit board and CRT in the direction of the arrow from the top case.
3. Disconnect two (2) connector (CN1D, CN401) and unsolder one (1) connector (CN803) on the EVF circuit board. (See Fig. 2-153)
4. Disconnect CRT socket.

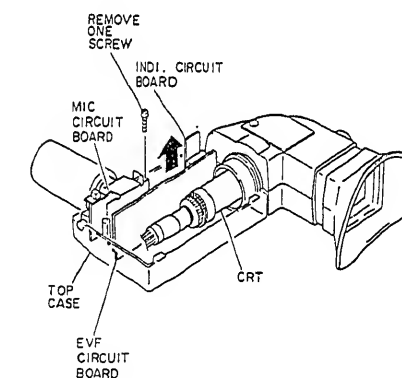


Fig. 2-152

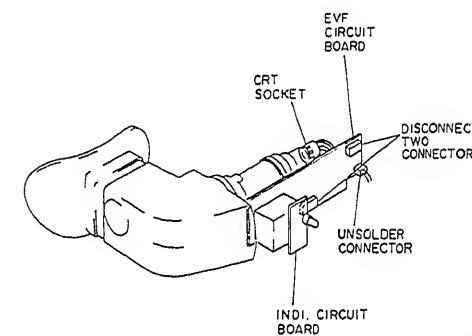


Fig. 2-153

5-3. MIC Circuit Board

ORDER FOR REMOVING PARTS	ITEM No.
• Bottom Case	5-1

1. Remove one (1) screw holding the EVF shield and pull out the MIC circuit board in the direction of the arrow from the top case. (See Fig. 2-154)
2. Disconnect connector CN401 on the MIC circuit board. (See Fig. 2-155)

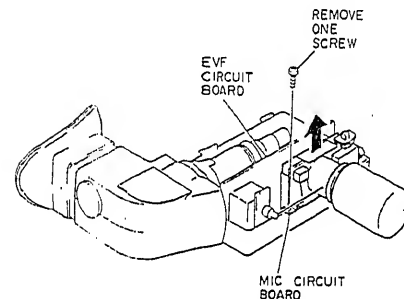


Fig. 2-154

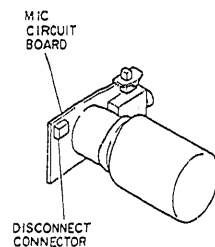


Fig. 2-155

5-4. CRT

ORDER FOR REMOVING PARTS	ITEM No.
• Bottom Case	5-1
• EVF Circuit Board	5-2

1. Release two (2) tabs and remove the eye cup. (See Fig. 2-156)
2. Open the mirror cover.
3. Remove one (1) screw holding the EVF lens bottom cover.
4. Open the EVF lens bottom cover in the direction of the arrow and remove the CRT from the EVF lens top cover.

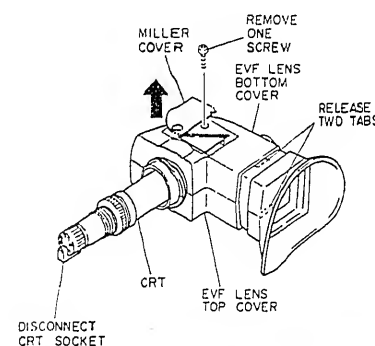


Fig. 2-156

6. TABLE OF FLAT PACKAGE ICS,/ SOLDERING IRON TIPS

SYMBOL No	DESCRIPTION	IRON TIP -No
CAMERA SECTION		
IC102	MN5128	6
IC103	MN3107CS	13
IC105	HA118120	6
IC106	MN3819S	12
VTR SECTION		
IC204	MM1002	11
IC206	NJM2228	14
IC208	NJM2235M	14
IC601	HD49741	6
IC901	HD4074719	7
IC902	MM1028BT	13

JIGS AND TAPES FOR ADJUSTMENT

1. Back Tension Meter Parts No. 7099004 	2. PALC Alignment Tape (MH-2) Parts No. 7099052 	3. Master Plane Parts No. 7099279 	4. Torque Gauge Parts No. 7099038
5. Torque Gauge Adapter Parts No. 7099204 	6. Dummy Reel Parts No. 7099043 	7. Reel Disk Height Jig Parts No. 7099038 	8. 0.9mm/1.27mm/1.5mm Hexagonal Wrench 1.27mm: No. 7099029
9. Fan Type Tension Gauge 	10. Back Focus Adjustment Driver Parts No. 7099205 	11. AV Input Cable 	12. RF Converter Unit (VH-RF70E)
13. Ext. Power Cable Parts No. 7099325 	14. 10-Pin, 14-Pin Extension Cable 10-Pin: No. 7099382 14-Pin: No. 7099383 	15. Light Balancing Filter 	

CHAPTER 3 MECHANICAL ADJUSTMENT

1. TAPE LOADING SYSTEM COMPONENTS ADJUSTMENT

1-1. LOADING CAM GEARS (SUPPLY/TAKE-UP) ADJUSTMENT (Fig. 3-1)

Always perform this adjustment when reinstalling the loading cam gears. Be sure to check this adjustment when reinstalling the loading gear.

1. Align mark (A) on the supply loading cam gear and mark (B) on the take-up loading cam gear when reinstalling them. Check that the supply and take-up guide roller bases are in the unloading state.

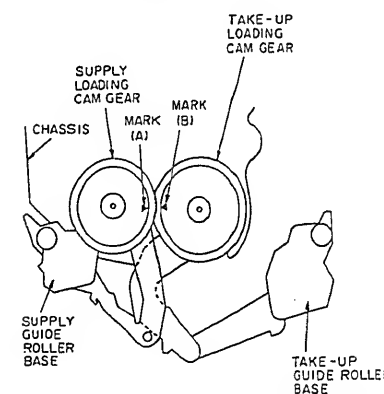


Fig. 3-1

1-2. MECHANISM STATE SWITCH AND DRIVING GEAR ADJUSTMENT (Figs. 3-2, 3-3)

Be sure to perform this adjustment when reinstalling the mechanism state switch and driving gear.

1. Align section (A) of the mechanism state switch and section (B) of the rotor. (See Fig. 3-2)
2. Align hole (D) in the relay gear and hole in the chassis.
3. Move the cassette holder lock drive arm so that the pin comes into connect with section (H) of the cam gear arm. Reinstall the driving gear following the procedure below in this condition. (See Fig. 3-3)
4. Install the driving gear into the chassis so mark (E) on the relay gear and hole (F) in the driving gear are aligned. Check that hole (G) of the driving gear and the hole in the chassis overlap each other at this time. (See Fig. 3-2)
5. Install the mechanism state switch in the condition set in step 1 into the chassis. Check that mark (C) on the mechanism state switch, mark (E) on the relay gear and hole (F) in the driving gear are lined up in straight line.

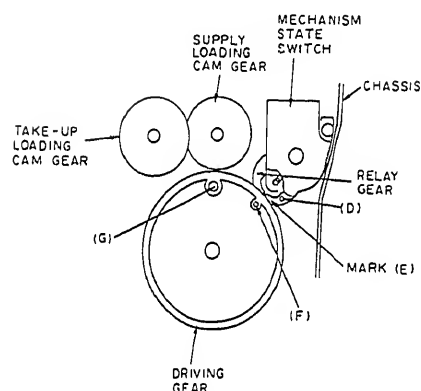
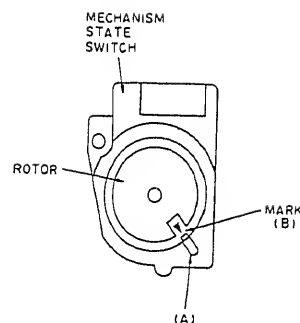


Fig. 3-2

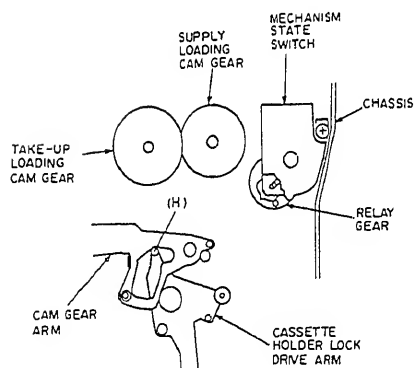


Fig. 3-3

1-3. LOADING GEAR AND TENSION POLE DRIVE ARM ADJUSTMENT (Fig. 3-4)

Be sure to perform this adjustment when reinstalling the loading gear and tension pole drive arm. Perform this adjustment after checking that the loading cam gears are installed correctly and are in the unloading state.

1. Reinstall the loading gear so its mark (A) and mark (B) on the supply loading cam gear are aligned.
2. Reinstall the tension pole drive arm so mark (D) on the relay gear and hole (C) in the tension pole drive arm are aligned.

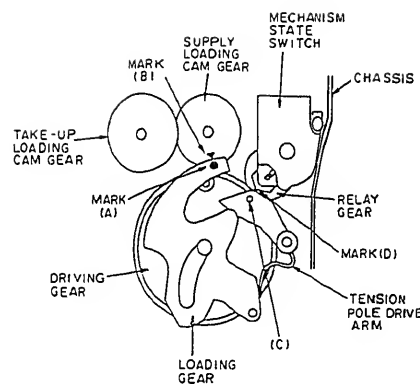


Fig. 3-4

2. TAPE TRANSPORT SYSTEM COMPONENTS CHECK/ADJUSTMENT

The tape transport system is the path from the supply reel to the take-up reel via the video heads. The tape transport components, especially the components which come into direct contact with the tape, should be kept clean without damage, dust and oil, etc. adhering to the contact surfaces. The tape transport system is adjusted before shipment from the factory, so when any transport components are replaced, the transport system is stabilized by correctly adjusting the new components.

2-1. REEL DISK HEIGHT ADJUSTMENT (Fig. 3-5)

1. Remove the cassette lid, right case and mount the master plane to the cassette holder.
2. Place a reel disk height jig on the master plane and fit it to the reel disk.
3. Check that the top of the reel disk is positioned between sections A and B of the reel disk height jig.
4. When the top of the reel disk is not positioned between section A and B, adjust the number of the spacers (2 types: 0.25 mm and 0.5 mm thick) at the bottom of the reel disk.

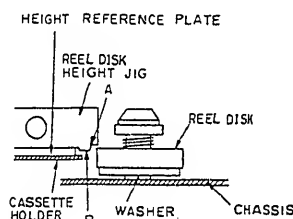


Fig. 3-5

2-2. TENSION POLE POSITION/TENSION ADJUSTMENT (Fig. 3-6)

Position Adjustment (Fig. 3-6)

1. Set the tension spring to position "C" on the spring holder.
2. Cover up the supply end sensor photocell located midway on the left side of the tape mechanism.
3. Place instrument in the "PLAY" mode.
4. After loading is completed, loosen screw (B) holding the tension band holder and adjust the position of the tension band holder so the tension pole is in section (A) (concave) of the guide roller rail.
5. After adjustment is completed, tighten screw (B).

Tension Adjustment (Fig. 3-6)

1. Load the instrument with the back tension meter.
2. Place the instrument in the "PLAY" mode.
3. Read the scale on the supply.
4. This reading should be between 19 and 26.
5. Move the tension arm spring to the position "A" or "B" on the spring holder when the tension adjustment tape reads 27 or higher, and to the position "D" or "E" on the spring holder when it is 18 or lower, and adjust the back tension for a nominal reading of 19-26 on the scale.
6. Recheck the tension arm position when the back tension is changed greatly (5 or more).

Note: The instrument must be in a horizontal position for this adjustment.

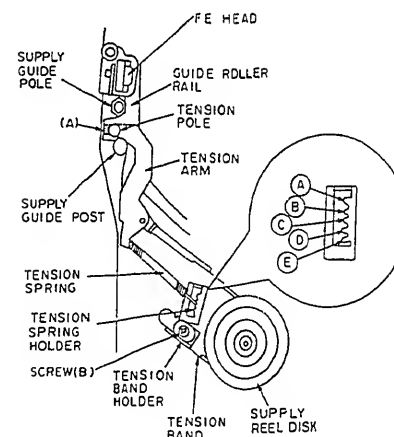


Fig. 3-6

2-3. SUPPLY/TAKE-UP GUIDE POLE HEIGHT ADJUSTMENT (Fig. 3-7)

Take-up Guide Pole Height Adjustment

1. Remove the cassette lid, right case and mount the master plane to the cassette holder.
2. Place a reel disk height jig on the master plane and fit it to the guide pole.

3. Adjust the nut on the top of the guide pole so that the upper flange is aligned with the top edge of the height jig.

Supply Guide Pole Height Adjustment

1. Run the tape and adjust the height of the take-up guide pole so that the bottom of the tape is aligned with the top of the lower flange.

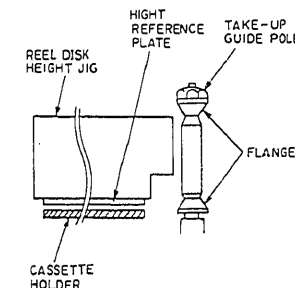


Fig. 3-7

2-4. SUPPLY/TAKE-UP GUIDE ROLLER HEIGHT ADJUSTMENT (Figs. 3-8, 3-9)

1. Remove the cassette lid, right case and mount the master plane to the cassette holder.
2. Place a reel disk height jig on the master plane and fit it to the supply guide roller.
3. Loosen the screw holding the supply guide roller and adjust its height so the bottom of the roller's upper flange and the top of the reel height jigs are aligned. Adjust the take-up guide roller in the same way.
4. After adjustment is completed, tighten the screw holding the guide roller.
5. Run the tape and check that the tape does not curl and ride over, and then perform the electrical adjustment.
6. Connect the oscilloscope to TP203 on the main board.
7. Trigger the oscilloscope at SW 25Hz. (Use TP206 on the main circuit board.)
8. Playback the colour bar signal on alignment tape (MH-2) and press the two (2) TRACKING control buttons (up and down) simultaneously.
9. Check that the FM waveform is flat.
10. If the FM envelope is not flat, fine adjust the height of the supply and take-up guide rollers to flatten the FM envelope.
11. Tighten the fixing screw.

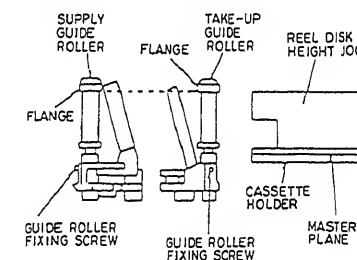
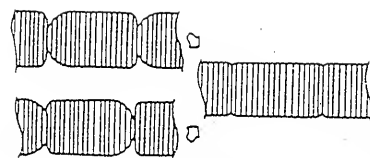


Fig. 3-8



Turn guide roller height adjustment screw a little of a time to flatten waveform.

Fig. 3-9

2-5. A/C HEAD ADJUSTMENT

(Figs. 3-10, 3-11, 3-12)

Perform the height, tilt and azimuth adjustments repeatedly to determine the A/C head installation position, then adjust the X value.

Detailed adjustment below is the procedure when the A/C head is replaced; be sure to do precise adjustment after rough adjustment.

Rough Adjustment (Fig. 3-10)

1. Remove the cassette lid, right case and mount the master plane to the cassette holder.
2. Adjust NUT (A), AZIMUTH SCREW (B), TILT HEX. SCREW (C) and SCREW (D) so the height difference between the height reference plate and A/C head plate is approx. 1.78 mm and A/C head base and A/C head plate are parallel.

Precise Adjustment (Figs. 3-10, 3-11)

3. Connect the oscilloscope to audio output (AV OUT).

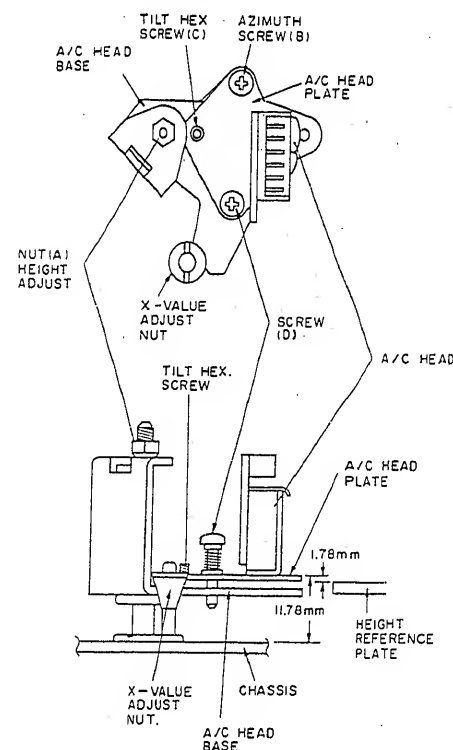


Fig. 3-10

4. Playback a 1 kHz audio signal (colour bar signal) on alignment tape (MH-2).
5. Adjust AZIMUTH SCREW (B) and TILT HEX. SCREW (C) for maximum output.

X-Value Adjustment (Figs. 3-10, 3-12)

6. Connect the oscilloscope to TP203 on the main board.
7. Trigger the oscilloscope at SW 25Hz. (Use TP206 on the main board)
8. Press the two (2) TRACKING control buttons (up and down) simultaneously.
9. Playback the colour bar signal on alignment tape (MH-2).
10. Adjust the X-value adjustment nut so the signal at TP203 (FM envelope) is maximum. Press the two (2) TRACKING control buttons (up and down) and check that the FM envelope becomes as shown in Fig. 3-12.

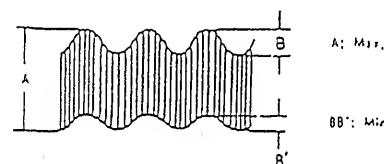


Fig. 3-11

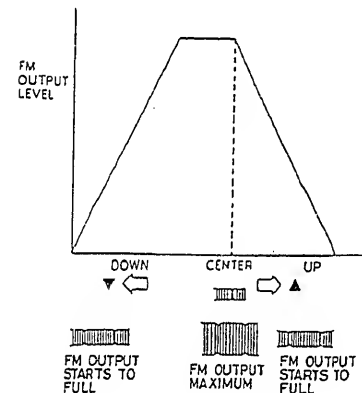


Fig. 3-12

2-6. ADJUSTMENT AFTER REPLACING THE CYLINDER (Fig. 3-13)

When the cylinder is replaced, the relative height with respect to the guide rollers or the X-value, etc. drifts (this drift is small when the cylinder is replaced correctly). Therefore, it is necessary to readjust the tape transport system and servo system. Perform checks and adjustments by the following steps.

1. Load a blank tape and play it. Check that no curling or creasing occurs around the guide rollers. If curling or creasing occurs, fine adjust the height of the guide rollers.
2. Confirm that the FM envelope is flat and level fluctuations are minimum. If it cannot be confirmed, adjust the

height of the guide rollers. See the next item for perform these checks adjustment.

3. Check or adjust the head switching point. See CHAPTER 4 for how to adjust this item.
4. Confirm that the X-value adjustment is correct (do not adjust the X-value even if it is not correct). If it can be confirmed, proceed to step 7, and if it cannot be confirmed, proceed to step 5.
5. Check or adjust the tracking preset. See CHAPTER 4 for how to adjust this item.
6. Adjust the X-value.

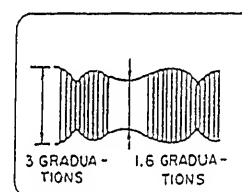
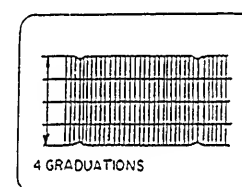
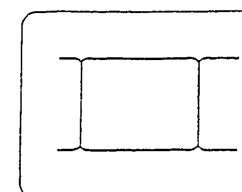


Fig. 3-13

7. Adjust the record chroma level. See CHAPTER 4 for how to adjust this item.

Check Flatness and Level Fluctuations of the FM Output (Fig. 3-13)

1. Connect the oscilloscope to TP203 on the main circuit board.
2. Trigger the oscilloscope at SW 25Hz. (Use TP206 on the main circuit board.)
3. Press the two (2) TRACKING control buttons (up and down) simultaneously.
4. Fine adjust the voltage level range of the oscilloscope and set the FM output to 4 graduations.
5. Press either TRACKING control button (up and down) to set the FM output to the maximum 3 graduations.
6. Check that the minimum amplitude is more than 2.0 graduations.

3. TENSION AND TORQUE CHECKS (Fig. 3-14)

It is necessary to check the tension, torque and compression strength in the tape take-up section and moving section to smoothen the tape transport and to satisfy the basic performance of the VTR. When the tape transport is not smooth or the tape speed is abnormal, detect the faulty section by this checking, and then check again after replacing the faulty parts with normal ones to complete the work.

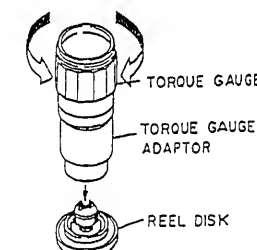


Fig. 3-14

Item	VTR Operation	Measured Reel	Measurement Value	Remarks
Main brake torque	STOP	Supply	140 g.cm or more	Fig. 3-14
		Take-up	100 g.cm or more	
Slack removal torque	UNLOADING	Supply	90-200 g.cm	Fig. 3-14
Fast forward torque	F.FWD	Take-up	400 g.cm or more	Fig. 3-14
Rewind torque	REW	Supply	400 g.cm or more	Fig. 3-14
Take-up torque	PLAY	Take-up	80-110 g.cm	Fig. 3-14
Back-tension torque	F.FWD	Supply	4 - 10 g.cm	Fig. 3-14
	REW	Take-up		

CHAPTER 4 ELECTRICAL ADJUSTMENT

1. CONNECTIONS FOR ADJUSTMENT

Remove the right case and left case as described previously.

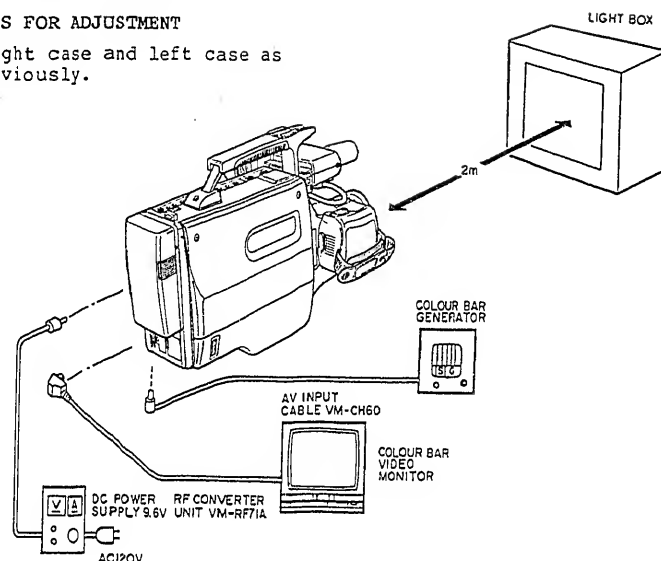


Fig. 4-1

2. CAMERA SECTION ADJUSTMENT

2-1. CIRCUIT BOARD LOCATIONS AND SERVICING POSITION

1. Autofocus Circuit Board
2. Sensor Circuit Board
3. DC-DC Converter
4. Control Circuit Board
5. Process Circuit Board
- A. 10-Pin Extension Cable (Part No. 7099382). Connect the sensor circuit board and process circuit board.
- B. 14-Pin Extension Cable (Part No. 7099383). Connect the sensor circuit board and process circuit board.

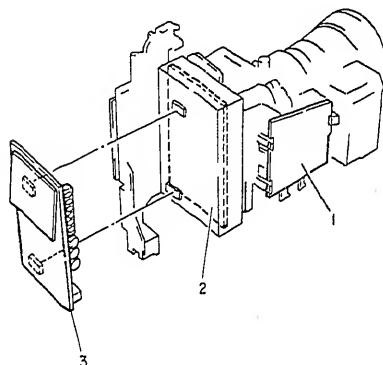


Fig. 4-2

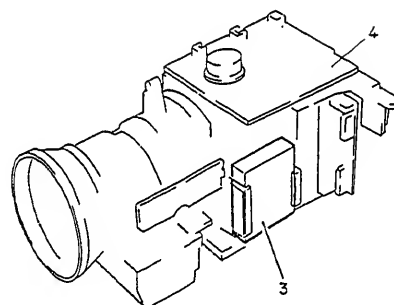


Fig. 4-3

2-2. TEST EQUIPMENT AND CHARTS NECESSARY FOR ADJUSTMENT

- Test Equipment
 - Oscilloscope (dual trace) (Vectorscope)
 - Digital Voltmeter (DVM)
 - Frequency Counter
 - Colour Video Monitor
- Charts, etc.
 - Gray Scale Chart
 - Colour Bar Chart
 - Resolution Chart
 - Backfocus Adjustment Chart
 - Light Box (3100°K)
 - DC Power Supply (9.6 V)
 - DC Power Supply (3.3 V)
 - Backfocus Adjustment Driver
 - Light Balancing Filter (C12)

2-3. ADJUSTMENT CONDITIONS

- 1) Check that the VTR section has been adjusted correctly before adjusting the camera section.
- 2) Connect this unit, a power supply and a colour video monitor as shown in Fig. 4-1.
- 3) Place the chart (light box) 2 m away from the camera (lens surface) when otherwise not specified.
- 4) Point the camera at the chart to fill the video period when otherwise not specified.
- 5) Use the 10:1 probe of the oscilloscope when otherwise not specified.
- 6) When "Trigger the oscilloscope at H. rate." is specified, set the time base of the oscilloscope to 10 μ s/div.
- 7) When using VIDEO OUT (in the AV output jack) to perform adjustment, be sure to terminate the AV output jack with 75 ohm.

Note: Be careful when applying an adjustment driver to CT101 because the stray capacitance of the driver may vary the frequency.

2) Subcarrier Lock Voltage Adjustment (Fig. 4-52)

This adjustments sets the subcarrier lock voltage to the specified value.

Test Point: TP201-1 Process

Adjust: CT201 (SUBCARRIER LOCK VOLT.) Process (IC203)

Observe: DVM

1. Connect the DVM to TP201-1.
2. Adjust CT201 (on the IC203) for $2.5V \pm 0.3V$.

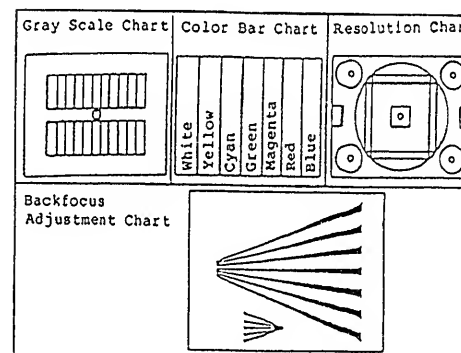
Note: Be careful when applying an adjustment driver to CT201 because the stray capacitance of the driver may vary the voltage. Use non-metallic adjustment tool.

2-4. PRESET POSITIONS OF SWITCHES AND CONTROLS DURING ADJUSTMENT

OPERATE "ON"
 CAM./VIDEO switch "CAM." position
 SHUTTER switch "MAN" position
 Shutter Speed "60 (1/60)"
 NEGA/POSI switch "POSI" position
 IRIS control "AUTO (Centre)" position
 FOCUS switch "MAN" position
 TITLE "OFF"

2-5. LIST OF CHARTS FOR CAMERA ADJUSTMENT

Table 4-1



2-6. CAMERA ADJUSTMENT

- 1) Subcarrier Frequency Adjustment (Figs. 4-51, 4-52)
 This adjustment set for frequency adjustment of subcarrier.

Test Point: TP201-4 Process

Adjust: CT101 (Fo ADJ) Sensor

Observe: Frequency Counter

1. Connect the frequency counter to TP201-4.
2. Adjust CT101 for $9.656250\text{MHz} \pm 20\text{Hz}$.

3) Backfocus Adjustment (Fig. 4-4)

The propose of this adjustment is to ensure proper focus tracking throughout the zoom range.

Adjust: BACKFOCUS ADJUSTMENT POINT (BACKFOCUS LENS)

Observe: Colour Video Monitor

1. Position the camera section two (2) meters from the backfocus adjustment chart and illuminate the object with approximately 100 lux.
2. Set the zoom to wide-angle end and set the index on the focus ring to two (2) meters.
3. Loosen the relay lens retaining screw.
4. Insert the backfocus adjustment driver into the backfocus adjustment hole and turn it to the left and right to optimize the focus.
5. Set the zoom to telephoto end and check that the chart is in focus. If it is not focused, set the zoom to wide-angle and readjust step 4.
6. Adjust so that the chart is approximately in focus at both the wide-angle and telephoto ends with the focus ring set to two (2) meters.

Note: After adjustment is completed, tighten the relay lens retaining screw and fix it with locking paint.

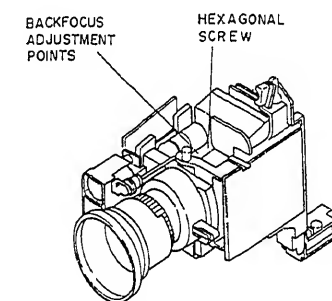


Fig. 4-4

4) Sensor Sub Voltage Adjustment (Figs. 4-5, 4-51)

This adjustment prevents vertical blooming.

Test Point:

VIDEO OUT (AV output jack)

Adjust:

RT101 (SENSOR SUB VOLTAGE) Sensor

Observe: Colour Video Monitor

1. Point the camera at a 40 W to 60 W incandescent lamp one (1) meter away. (See Fig. 4-5)
2. Turn RT101 fully counterclockwise and then turn it gradually clockwise to adjust so that the band of blooming appearing in the vertical direction of the monitor screen just disappears.

Note: Stop RT101 Where blooming disappears and careful not to turn it too far.

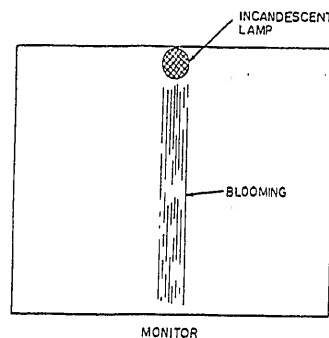


Fig. 4-5

5) Luma Setup Adjustment (Figs. 4-6, 4-52)

This adjustment sets the brightness of the picture.

Test Point:

VIDEO OUT (AV output jack)

Adjust:

RM201-4 (LUMA SETUP) Process

Observe: Oscilloscope

1. Cap the lens.
2. Set the IRIS control to CLOSE position.
3. Connect the oscilloscope to video out.
4. Trigger the oscilloscope at H. rate. (Use TP201-3 (HD) on the process circuit board.)
5. Adjust RM201-4 for $35\text{mV} \pm 15\text{mV}$ ($5\text{IRE} \pm 2\text{IRE}$) from the blanking level to the centre of the waveform.
6. Set the IRIS control to AUTO position.

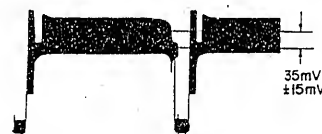


Fig. 4-6

6) AIC Level Adjustment (Figs. 4-7, 4-52)

This adjustment sets the balance point of the auto iris control.

Test Point:

VIDEO OUT (AV output jack)

Adjust:

RM201-5 (AIC) Process

Observe: Oscilloscope

1. Aim the camera at the gray scale chart.
2. Connect the oscilloscope to video out.
3. Trigger the oscilloscope at H. rate. (Use TP201-3 (HD) on the process circuit board.)
4. Adjust RM201-5 for $700\text{mVp-p} \pm 15\text{mV}$ ($98\text{IRE} \pm 2\text{IRE}$) from the blanking level to the centre of the white level on the gray scale.

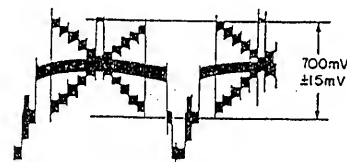


Fig. 4-7

7) White Balance Hold Voltage Setting (Fig. 4-52)

Test Point: TP201-5

Process

TP201-11 (GND) Process

Observe: DVM

1. Cap the lens.
2. Connect the DVM and DC power supply to TP201-5.
3. Apply $\text{DC } 3.3\text{V} + 0.05\text{V}$ to TP201-5.
4. Connect TP201-5 to ground (TP201-11) and remove ground (TP201-11) connection from TP201-5.

Note: White Balance Hold Voltage Setting is required prior to performing R-Y, B-Y Setup Adjustment and White Balance Adjustment.

8) R-Y, B-Y Setup Adjustment (Figs. 4-8, 4-52)

This adjustment sets the proper black balance of the picture.

Test Point:

VIDEO OUT (AV output jack)

Adjust:

RM201-2 (B-Y SETUP) Process

RM201-3 (R-Y SETUP) Process

Observe: Oscilloscope
Vectorscope

Adjustment using the oscilloscope
(Fig. 4-8)

1. Cap the lens.
2. Connect the oscilloscope to video out.

3. Trigger the oscilloscope at H. rate. (Use TP201-3 (HD) on the process circuit board.)

4. Adjust RM201-2 and RM201-3 for minimum carrier in the waveform.

Adjustment using the vectorscope

See Page 4-6.

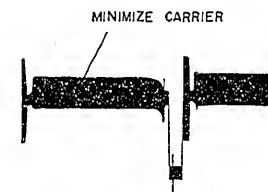


Fig. 4-8

9) White Balance Adjustment (Figs. 4-9, 4-52)

This procedure sets the correct red and blue signal levels for proper white balance circuit operation.

Test Point:

VIDEO OUT (AV output jack)

Adjust: RT201 (RED GAIN) Process

RT202 (BLU GAIN) Process

Observe: Oscilloscope

Vectorscope

Adjustment using the oscilloscope
(Fig. 4-9)

1. Attach the light balancing filter C12 over the lens.
2. Aim the camera at the gray scale chart.
3. Connect the oscilloscope to video out.
4. Trigger the oscilloscope at H. rate. (Use TP201-3 (HD) on the process circuit board.)
5. Adjust RT201 and RT202 to minimize the carriers at each step of the waveform.

Adjustment using the vectorscope

See Page 4-6.

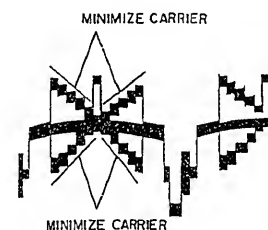


Fig. 4-9

10) Chroma Level Adjustment (Figs. 4-10, 4-52)

This adjustment sets the chroma level.

Test Point:

VIDEO OUT (AV output jack)

Adjust:

RT203 (CHROMA LEVEL) Process

Observe: Oscilloscope

Vectorscope

Adjustment using the oscilloscope
(Fig. 4-10)

1. Remove the DC power supply (3.3V) from TP201-5.
 2. Attach the light balancing filter C10 (C8 + C2) over the lens.
 3. Aim the camera at the colour chart.
 4. Connect the oscilloscope to video out.
 5. Trigger the oscilloscope at H. rate. (Use TP201-3 (HD) on the process circuit board.)
 6. Adjust RT203 so that the red level of the waveform is $600\text{mV} \pm 50\text{mV}$ ($84\text{IRE} \pm 7\text{IRE}$).
- Check that the tint of the chart and the tint of the picture are approximately matched at this time.

Adjustment using the vectorscope

See Page 4-6

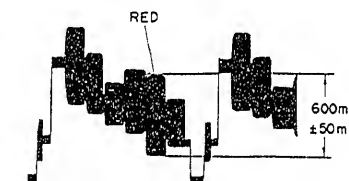


Fig. 4-10

2-7. ELECTRONIC VIEWFINDER (EVF) ADJUSTMENT

1) Deflection Yoke Position Adjustment (Fig. 4-11)

This adjustment procedure eliminates picture tilt on the EVF display.

Adjust: Deflection yoke
Observe: EVF Display

1. Align the camera with the resolution chart making sure that both the camera and the chart are on the same plane.
2. Loosen the screw holding the deflection yoke.
3. Turn the deflection yoke so that the EVF picture (chart) is horizontal, matching the edges of the CRT.

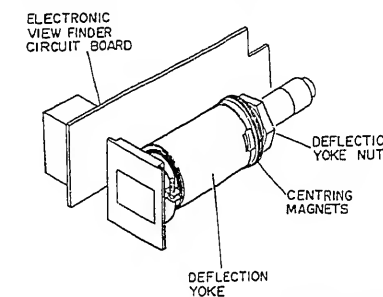


Fig. 4-11

Note: After adjustment is completed, tighten the deflection yoke retaining screw.

2) EVF Centring Adjustment (Fig. 4-11)
This adjustment centres the image observed by the camera in the EVF display.

Adjust: Centring Magnets
Observe: EVF Display

1. Aim the camera at the resolution chart and align the centre of the chart with the centre of the camera lens.
2. Remove the locking paint from the centring magnets.
3. Adjust the centring magnets until the centre of the picture viewed by the camera is positioned in the centre of the EVF Display.

Note: After adjustment is completed, fix the centring magnets with lock paint.

3) EVF Vertical Size Adjustment (Fig. 4-53)

This adjustment determines the vertical size of the image appearing in the EVF display.

Adjust: RT802 (V. SIZE) EVF
Observe: EVF Display

1. Aim the camera at the resolution chart, and line up the reference arrow head with the edge of the raster in the EVF.
2. Adjust RT802 so that the top and bottom edges of the chart match the top and edges of the CRT.

4) EVF Brightness Adjustment (Fig. 4-53)
This adjustment sets the brightness of the picture in the EVF display.

Adjust: RT805 (BRIGHT) EVF
Observe: EVF Display

1. Aim the camera at the gray scale chart.
2. Adjust RT805 to optimize the EVF picture.

5) EVF Focus Adjustment (Fig. 4-53)
This control adjusts for optimum focus of the electronic viewfinder picture.

Adjust: RT803 (FOCUS) EVF
Observe: EVF Display

1. Aim the camera at the resolution chart.
2. Adjust RT803 so that the EVF picture is clear.

2-8. AUTOFOCUS ADJUSTMENT

1) Sensor Position Adjustment (Fig. 4-12)

Adjust: Sensor Adjustment Screw
Observe: Colour Video Monitor

1. Position the camera section two (2) meters from the backfocus adjustment chart and illuminate the object with approximately 100 lux.
2. Remove the autofocus adjustment cap.
3. Set the index on the focus ring to two (2) meters. Check that the chart is in focus. If it is not in focus, readjust the backfocus.
4. Set the zoom to telephoto end.
5. Set the FOCUS switch to AUTO position.
6. Operate the autofocus from the telephoto end to the wide-angle end and check that the chart is in focus with the index at two (2) meters.
7. If the chart is not in focus, turn the Sensor Adjustment Screw so the index on the focus ring is two (2) meters.

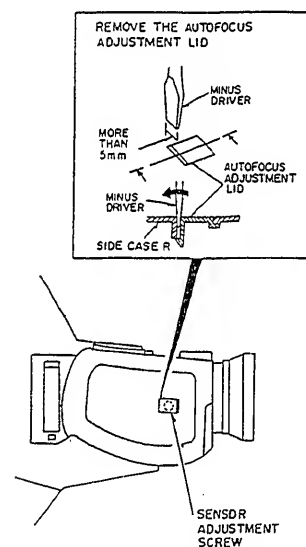


Fig. 4-12

2-9. ADJUSTMENT USING THE VECTORSCOPE

Note 1: Use the video output jack as the test point for all adjustments.
 Note 2: Terminate the vectorscope with 75 ohm or connect the vectorscope to the video output jack terminated with 75 ohm.

ITEM No.	ADJUSTMENT NAME	SUBJECT	ADJUSTMENT POINT	PROCEDURE	Fig. No.
9)	R-Y, B-Y Setup Adjustment	Lens Cap	RM201-2 RM201-3	1. Cap the lens. 2. Apply DC 3.3V (+ 0.05V) to TP201-5. (See ITEM 7)) 3. Adjust RM201-2 and RM201-3 so that the bright spot is positioned at the centre.	4-13
10)	White Balance Adjustment	Gray Scale	RT201 RT202	1. Apply DC 3.3V (+ 0.05V) to TP201-5. (See ITEM 7)) 2. Attach the light balancing filter C12 over the lens. 3. Adjust RT201 and RT202 so that the bright spot is positioned at the centre.	4-13
12)	Chroma Level Adjustment	Color Bar	RT203	1. Attach the light balancing filter C10 (C2 + C8) over the lens. 2. Adjust RT203 so that the red vector is equal to more than 230% \pm 5% when compared to the burst level.	4-14

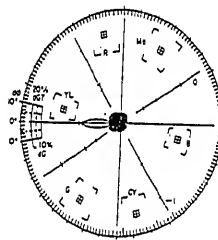


Fig. 4-13

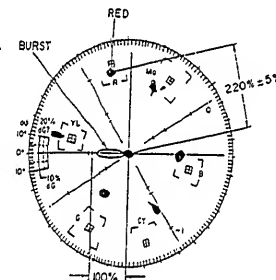


Fig. 4-14

2-9. ADJUSTMENT COMPONENTS LOCATIONS

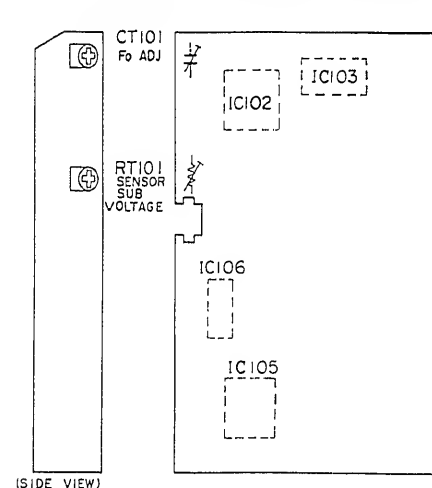


Fig. 4-51 Sensor Circuit Board (Solder Side)

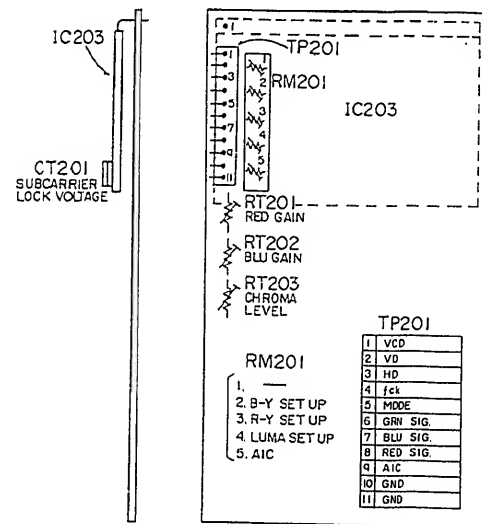


Fig. 4-52 Process Circuit Board (Components Side)

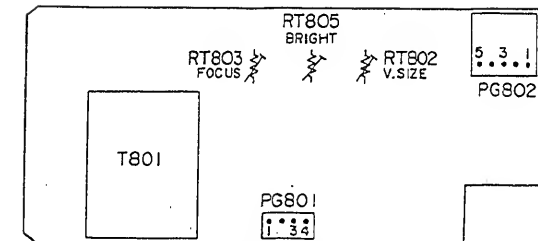


Fig. 4-53 Electronic Viewfinder Circuit Board (Components Side)

3. VTR SECTION ADJUSTMENT

3-1. CIRCUIT BOARD LOCATIONS AND SERVICING POSITIONS

Remove the right case and left case as described previously.
 1. Main Circuit Board
 2. Supply Sensor Circuit Board
 3. Take-up Sensor Circuit Board

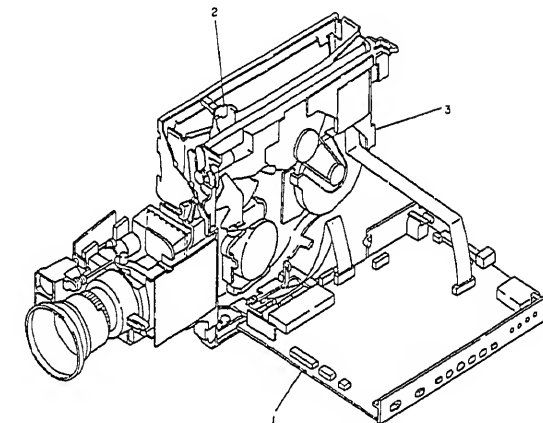


Fig. 4-101

3-2. TEST EQUIPMENT AND ALIGNMENT TAPES NECESSARY FOR ADJUSTMENT

- Test Equipment
 - Oscilloscope (dual trace)
 - Digital Voltmeter (DVM)
 - Millivoltmeter
 - Frequency Counter
 - Colour Video Monitor
- Alignment Tape and Charts, etc.
 - PAL Alignment Tape (MH-2)
 - Blank Tape
 - DC Power Supply (9.6V)

3-3. ADJUSTMENT CONDITIONS

- 1) Connect this unit, a power supply and a colour video monitor as shown in Fig. 4-1.
- 2) Before adjusting the VTR section, check that the camera section has been adjusted correctly.
- 3) Use the 10:1 probe of the oscilloscope when otherwise not specified.
- 4) When "REC" mode is specified, set the CAM./VIDEO switch to CAM. position and press the REC start stop button on the autofocus circuit board or STILL button on the function switches.

- 5) When "TRACKING PRESET" position is specified, press the two (2) TRACKING control buttons (up and down) simultaneously.

3-4. PRESET POSITIONS OF SWITCHES AND CONTROLS DURING ADJUSTMENT

OPERATE "ON"
 CAM./VIDEO switch "VCR" position
 TRACKING "Preset" position

3-5. SERVO SECTION

- 1) Head Switching Point Adjustment (Figs. 4-102, 4-151)
 The pulse generator shifter determines the video head switching point during playback. Misadjustment of pulse generator shifter may cause head switching noise in the picture and/or vertical instability.

Test Point:
 VIDEO OUT (AV output jack)
 TP206 (SW 25Hz) Main
 Adjust: RT601 (PG SHIFTER) Main
 Observe: Oscilloscope

1. Set the VIDEO/CAM switch to the VIDEO position.
2. Load the instrument with a PAL alignment tape (MH-2) and play it back the colour bar signal.
3. Connect the oscilloscope to video out. (0.5V/50μsec.cm).
4. Trigger the oscilloscope at SW 25Hz.
5. Set the oscilloscope to (-) slope and adjust RT601 so that the trailing edge of the SW 25Hz signal is placed $6.5H \pm 0.5H$ (horizontal) lines before the start of CH-1 vertical sync.
6. Set the oscilloscope to (+) slope and confirm the leading edge of the SW 25Hz signal is $6.5H \pm 0.5H$ (horizontal) lines before the start of CH-2 vertical sync.

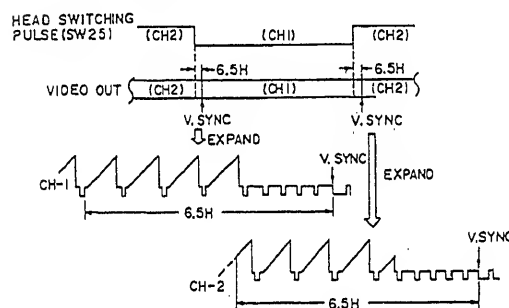


Fig. 4-102

3-6. LUMINANCE/CHROMA SECTION

1) Record Chroma Level Adjustment (Figs. 4-103, 4-151)

Optimum record colour level is regulated by this adjustment. If the record chroma level is too high, diamond beats can be seen in the screen. If the level is too low, the colour is degraded.

Test Point: TP202 Main
TP206 (SW 25Hz) Main

Adjust: RT202 (REC CHROMA LEVEL) Main
Observe: Oscilloscope

1. Apply a PAL colour bar signal to AV IN jack.
2. Adjust the input colour bar signal level for 1Vp-p measured at the video input jack.
3. Connect the oscilloscope to TP202. (Use the shield cover on the main circuit board of the preamp section as ground.) (50mV/2msec.cm)
4. Trigger the oscilloscope at SW 25Hz.
5. Load the instrument with a blank tape.
6. Place the instrument in the "REC" mode.
7. Adjust RT202 so that the record chroma level is $120mV \pm 5mV$.

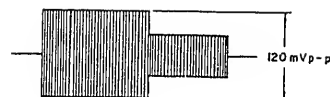


Fig. 4-103

2) LH Delay Line Output Level

Adjustment (Figs. 4-104, 4-151)

This adjustment makes the input and output levels of the LH delay Line the same. If this adjustment is incomplete, switching noise is conspicuous when dropout is compensated.

Test Point: IC202-5 Main
TP206 (SW 25Hz) Main

Adjust: RT201 Main
(LH DELAY LINE OUTPUT LEVEL)

Observe: Oscilloscope

1. Load the instrument with an PAL alignment tape (MH-2) and play it back the colour bar signal.
2. Connect the oscilloscope to IC202-5. (0.2V/5msec.cm).
3. Trigger the oscilloscope at SW 25Hz. (Use TP206 on the main circuit board.)
4. Adjust RT201 to minimize noise at the waveform.

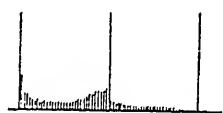
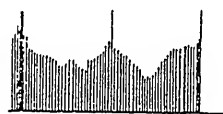


Fig. 4-104

3-7. AUDIO SECTION

1) Audio Bias Level Adjustment (Fig. 4-151)

This adjustment optimizes the audio record bias.

When the audio record bias is too low, high frequencies are increased resulting in distortion. When the level is too high, high frequencies are attenuated.

Test Point: TP401 Main
TP402 (GND) Main

Adjust: RT401 (AUDIO BIAS LEVEL) Main
Observe: Millivoltmeter

Note: Perform this adjustment without applying an audio signal.

1. Connect the millivoltmeter to TP401. (Use TP402 as ground.)
2. Load the instrument with a blank tape.
3. Place the instrument in the "REC" mode.
4. Adjust RT401 for $2.4mV \pm 0.1mV$.

2-10. ADJUSTMENT COMPONENTS LOCATIONS

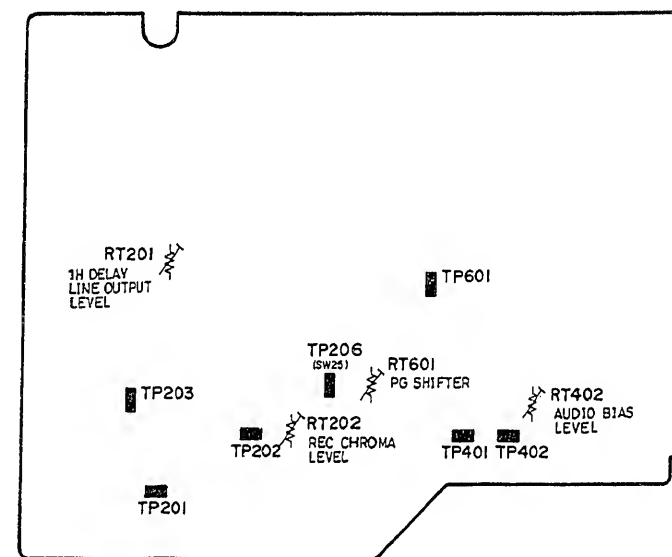


Fig. 4-151 Main Circuit Board
(Solder Side)

CHAPTER 5 SCHEMATIC DIAGRAMS AND CIRCUIT BOARD DIAGRAMS

WHEN USING THIS SERVICE REFERENCE MATERIAL

1. Markings in Schematic and Circuit Board Diagrams

- (1) Parts with marks "■" attached to circuit numbers in the schematic and circuit board diagrams are discrete components.
- (2) Parts with marks "⊙" in the circuit board diagrams are leadless jumpers.

2. How to Read Abbreviations

Values, dielectric resistances (power capacitances), tolerances, grades of resistors (excluding variable resistors, etc.) and capacitors are indicated in the schematic diagrams using abbreviations. Collate these abbreviations and the following tables for reading abbreviations to replace parts correctly.

2-1. Resistors

	Value	No indication Ohm K kohm
	Tolerance	No indication ±5% K ±10% M ±20%
	Power Capacitance	No indication 1/8W (All capacitances other than 1/8W are indicated in schematic diagrams with W omitted)
	Type	No indication .. Carbon film fixed RC Carbon solid RW Power-type wire-wound solid RS Metal oxide film solid RN Metal film solid
Example		
R210 150 kohm, carbon solid		
150K 1/2W, ±10%		
RC.1/2K		

2-2. Capacitors

	Value	No indication pF P pF
	Dielectric resistance	No indication 50WV (All resistances other than 50WV and those of electrolytic capacitors are indicated with WV omitted.)
	Tolerances	No indication ±10% J ±5% M ±20% C ±0.25PF Z ±80%/-20% (No indication with electrolytic capacitors (excluding tantalum and high stability electrolytic capacitors))
	Type	No indication .. Ceramic, general electrolytic (see circuit symbol to distinct from ceramic) MYL Mylar (Polyester film) STY Styrol TA Tantalum KU High stability electrolytic MP Metallized paper
Example		
C210 Mylar, 0.01pF, 25WV		
0.01/25 ±5%		
MYL. J		

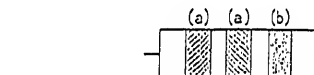
3. How to Read Capacitance of Resistance-Type Capacitors and Coils

3-1. Capacitors

Basic color	Color	Related voltage
(a)	Pink	25V
(b)	Light-green	50V

Color	Capacitance (a)	Multiplier (b)	Tolerance (c)	Characteristics (d)
Black	0	10 ⁰	±20%	For temperature compensation
Brown	1	10 ¹		
Red	2	10 ²		
Orange	3	10 ³		
Yellow	4	10 ⁴		
Green	5	10 ⁵		
Blue	6	10 ⁶		
Purple	7			
Gray	8		±30%	High permittivity type
White	9			For temperature compensation
Gold			±5%	
Silver			±10%	

3-2. Coils



4. Cautions on Use of MOS ICs

- (1) MOS ICs are inserted in black foam for shipment. This foam is a conductor which short-circuits between the leads to prevent damage. Do not remove ICs from this foam during storage. Avoid removing ICs from this foam, placing them on plastic which is likely to be charged with static electricity or inserting them into styrol foam.
 - (2) High voltages may be applied during soldering caused by leakages from the soldering iron, so be sure to ground the tip of the soldering iron or use a low voltage soldering iron.
 - (3) The human body and clothes made of synthetic fibres or nylon gloves may be charged with several thousands volts of static electricity because of friction, so workers should be grounded.
 - (4) Be sure to ground measuring instruments such as oscilloscopes, VTVMs, etc. used for repairs.
 5. Measure the voltages at each section with the negative side of power supply as a reference.
- The voltages in the camera section are measured with the VTR in the record mode, and those in the VTR section are measured in the record and playback modes.
- * Voltages in () are in the record mode.
 - * One voltage value is common for recording and playback.

LEADLESS COMPONENT IDENTIFICATION

1. Leadless Transistors

The leadless transistor number is indicated by a code on its surface, using one letter, one letter and one numeral, two letters, two letters and one numeral, two numerals and one letter, or three letters.

Letter	Transistor Number	Letter	Transistor Number
A	2SB709	H	2SA1036K
A (R)	2SB1218R (AR)	I	2SB792
A (S)	2SB766S (AS)	J	2SC2735
A (J)	2SB1000J (AJ)	K	2SA1036
B	2SC1621	K (P)	2SC2413P (KP)
B (J)	2SB1001J (BJ)	L	2SC2462
B (R)	2SC4081R (BR)	M	2SA1052
B (R)	2SC2412AR (BR)	N	2SC1653
B (S)	2SC2412KS (BS)	N (E)	2SD1306E (NE)
C	2SA1122	P	2SD814
C (L)	2SD999L (CL)	P (E)	2SA1171E (PE)
C (R)	2SB710R (CR)	Q	2SC2620
C (R)	2SC4097R (CR)	Q (O)	2SC2714O (QO)
C (R)	2SC2411R (CR)	R	2SC2618
C (Q)	2SC2411KQ (CQ)	S	2SA1121
D	2SC2463	S (Q)	2SC3082KQ (SQ)
D (L)	2SB798L (DL)	U	2SC2404
E	2SA1022	W	2SD602
F	2SC2619	Y	2SD601
F (S)	2SA1037KS (FS)	Y (R)	2SD1819R (YR)
F (R)	2SA1576R (FR)	Z	2SD874
AA (S)	2SD1757KS (AAS)	DB (R)	2SD1766R (DBR)
BC (R)	2SB1188R (BCR)	IR (D)	2SA1484D (IRD)
BF (R)	2SB1308R (BFR)		
LD (T)	2SD1328T (LDT)	1C (R)	2SB902R (1CR)
B (3)	2SC1621 (3) (B3)	L (6)	MMBC1623 (6) (L6)
C (7)	2SA811 (7) (C7)	L (6)	2SC1623 (6) (L6)
L (7)	2SC2812 (7) (L7)	F (2)	2SC1009 (2) (F2)
M (6)	2SA812 (6) (M6)	M (6)	2SA1179 (6) (M6)
N (4)	2SC1653 (4) (N4)		
D (16)	2SC1622A (16) (D16)	R (25)	2SC3356 (25) (R25)
R (35)	2SC3583 (35) (R35)	R (45)	2SC3585 (45) (R45)
Y (25)	NTM3906 (25) (Y25)		
1 (D)	2SC3127D (1D)		
S1	FMS1	S2	FMS2
T1	IMT1	W1	FMW1
W2	FMW2	W3	FMW3
X1	IMX1	Y1	FMY1
Y3	FMY3	Z1	IMZ1
Z2	IMZ2		
4R	XN1C301	5H	XN4501
5K	XN4401		
Digital Transistor			
04	DTC114TK	06	DTC144TK
13	DTA143EK	15	DTA124K
15 (S)	DTA124EU	16	DTA144EK
16 (S)	DTA144EU	23	DTC143EK
24	DTC114EK	24 (S)	DTC114EU
25	DTC124K	25 (S)	DTC124EU
26	DTC144K	26 (S)	DTC144EU
33	DTA143XK	43	DTC143XK
52	DTA123YK	64	DTC114YK
6B	UN5112	0B	UN5212
FS2	DTB123	G21	DTD113ZK
HD3	DTC343TK	H27	DTC363EK
R31	FP1L2Q		
A1	FMA1	A2	FMA2
B2	IMB2	C2	FMG2
D2	IMD2	G1	FMG1
G2	FMG2	G5	FMG5
H2	IMH2		

Letter	Transistor Number	Letter	Transistor Number
PET			
G	2SK302	J	2SK208
K	2SK160	W	2SK322
X	2SK157	X (4)	2SK94 (4) (X4)
X (17)	2SK425 (17) (X17)		
Y	2SK197	Z	2SK217
XA	2SK980		
3	2SK620	3 (O)	2SK621 (O) (3O)
1M	2SA1052	1F	2SK321
1K	2SK316	2B	2SK374

* "(s)" in the above table shows a component with smaller size.
* Codes on the digital transistors show only the transistor numbers.

- (1) Identification for two letters.
Use this code and the following chart for component identification.

Example:

Code	Number
CD	2SA1122D
LD	2SC2462D

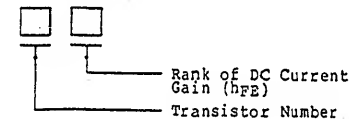


Fig. 5-1 Leadless Transistor Code

- (2) Identification for two types of one letter and one numeral.
Use this code and the following chart for component identification.

Letter	Transistor Number
L	2SC1623

Example:

Code	Number
L5	2SC1623 (5)
L6	2SC1623 (6)

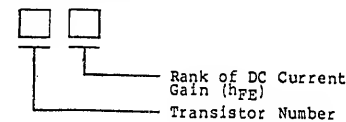
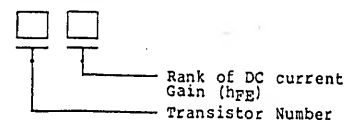


Fig. 5-2 Leadless Transistor Code

Example:

Code	Number
1D	2SC3127D



Note: Codes S1, S2, T1, W1, W2, W3, X1, Y1, Y3, Z1 and Z2 show only the transistor numbers.

Fig. 5-3 Leadless Transistor Code

- (3) Identification for one numeral and two letters.
Use this code and the following chart for component identification.

Example:

Code	Number
1FQ	2SK321Q

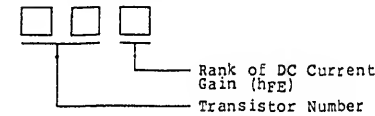


Fig. 5-4 Leadless Transistor Code

- (4) Identification for one letter and two numerals.
Use this code and the following chart for component identification.

Example:

Code	Number
R25	2SC3356

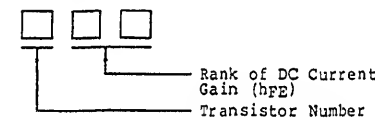


Fig. 5-5 Leadless Transistor Code

- (5) Identification for two letters and one numeral.
Use this code and the following chart for component identification.

Example:

Code	Number
DV5	2SD596

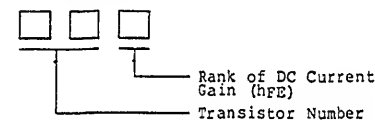


Fig. 5-6 Leadless Transistor Code

- (6) Identification for three letters.
Use this code and the following chart for component identification.

Example:

Code	Number
AAS	2SD1757KS

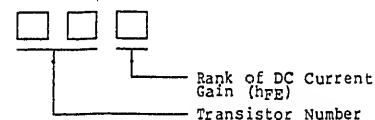


Fig. 5-7 Leadless Transistor Code

2. Leadless Diodes

Leadless diode numbers are indicated by a code on the surface, using one letter and one numeral, two letters, two letters and one numeral, two numerals and one letter, or three numerals.
Use this code and the following chart for component identification.

Code	Diode Number	Code	Diode Number
BE	1SV172	MC (s)	MA143
MC	MA153	MH (s)	MA141K
MH	MA151K	MN (s)	MA141WA
NN	MA151WA		
MO	MA152WA	MT (s)	MA141WK
MT	MA151WK		
MU	MA152WK		
M1D	MA160	M1P	MA714
M2A	MA122	SLA	1SR143
N	DAN202K	Z	DA106K
A3	1S2835	A5	1S2837
C1	HSM88S	C2	HSM276S
1A	MA110		
3.0L	MA3030L	4.3L	MA3043L
4.7M	MA3047M	5.1M	MA3051M
5.1L	MA3051L	5.6M	MA3056M
6.2L	MA3062L	6.8M	MA3068
6.8M	MA3068M	7.5H	MA3075H
7.5L	MA3075L	8.2M	MA3082M
9.1M	MA3091	9.1M	MA3091M
10L	MA3100L	56M	MA3056M
75L	MA3075L	82M	MA3082M
91M	MA3091M		
20	H2M6-B	27	RD2.7M-B
30	RD3.0M-B	51	RD5.1M-B2
56	RD5.6M-B	91	RD9.1M-B
102	RD10M-B2	122	RD12M-B2
163	RD16M-B3	182	RD18M-B2
271	RD2.7M-B	272	RD2.7M-B2
301	RD3.0M-B	362	RD3.6M-B2
391	RD3.9M-B1	512	RD5.1M-B2
561	RD5.6M-B	621	RD6.2M-B1
681	RD6.8M-B	683	RD6.8M-B3
911	RD9.1M-B		

* "(s)" in the above table shows a component with smaller size.

3. Leadless Resistors

The resistor value is indicated on the surface of the component, using a three-digit numbers, or one letter and one numeral.

- (1) Identification for three digit numbers.

Read this code following the same procedure as when reading the color code on discrete resistors.

Code	Value
330	$33 \times 10^0 = 33 \text{ ohms}$
561	$56 \times 10^1 = 560 \text{ ohms}$
123	$12 \times 10^3 = 12K \text{ ohms}$
1R2	$1 + 0.2 = 1.2 \text{ ohms}$
	(R: Decimal point)

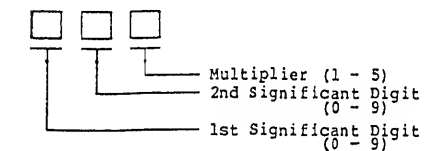


Fig. 5-8 Leadless Resistor Code

- (2) Identification for one letter and one numeral.
Use this code and the following chart for component identification.

Letter	Value	Letter	Value	Letter	Value
A	1	J	2.2	S	4.7
C	1.2	L	2.7	U	5.6
E	1.5	N	3.3	W	6.8
G	1.8	Q	3.9	Y	8.2

Example:

Code	Value
A1	$1 \times 10^1 = 10 \text{ ohms}$
G2	$1.8 \times 10^2 = 180 \text{ ohms}$
L3	$2.7 \times 10^3 = 2700 \text{ ohms}$
S4	$4.7 \times 10^4 = 47K \text{ ohms}$
W5	$6.8 \times 10^5 = 680K \text{ ohms}$

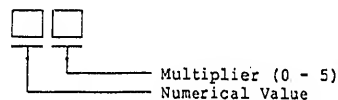
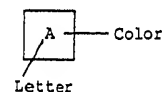


Fig. 5-9 Leadless Resistor Code

4. Leadless Capacitors

The capacitance value is indicated on the surface of the component, using body color and one letter, or one letter and one numeral.

- (1) Identification for body color and one letter.

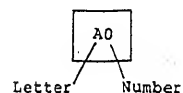


Body Color	Letter	Value	Body Color	Letter	Value
Red	A	1(PF)	Blue	A	100(PF)
	C	2		C	120
	E	3		E	150
	G	4		G	180
	J	5		J	220
	L	6		L	270
	N	7		N	330
	Q	8		Q	390
	S	9		S	470
Black	A	10(PF)	White	U	560
	C	12		W	680
	E	15		Y	820
	G	18	Green	A	0.001(μF)
	J	22		E	0.0015
	L	27		J	0.0022
	N	33		L	0.0027
	Q	39		N	0.0033
	S	47		S	0.0047
	U	56		W	0.0068
	W	68	Yellow	A	0.01(μF)
	Y	82		E	0.015
				J	0.022
				N	0.033
				S	0.047
				U	0.056
				W	0.068
				Y	0.082

Example:

Color	Code	Value
Red	A	1PF
Black	A	10PF

- (2) Identification for one letter and one numeral.



Letter / Number	Value	Letter / Number	Value
A0	1(PF)	A2	100(PF)
H0	2	C2	120
M0	3	E2	150
d0	4	G2	180
f0	5	J2	220
m0	6	L2	270
n0	7	N2	330
t0	8	Q2	390
y0	9	S2	470
A1	10(PF)	U2	560
C1	12	W2	680
E1	15	Y2	820
G1	18	A3	0.001(μF)
J1	22	E3	0.0015
L1	27	J3	0.0022
N1	33	N3	0.0033
Q1	39	S3	0.0047
S1	47	W3	0.0068
U1	56	A4	0.01(μF)
W1	68	E4	0.015
Y1	82	J4	0.022
		N4	0.033
		S4	0.047
		U4	0.056
		W4	0.068
		A5	0.1

Example:

Letter / Number	Value
A0	1PF
A1	10PF

5. Leadless Jumper

The leadless jumper is indicated as shown below.

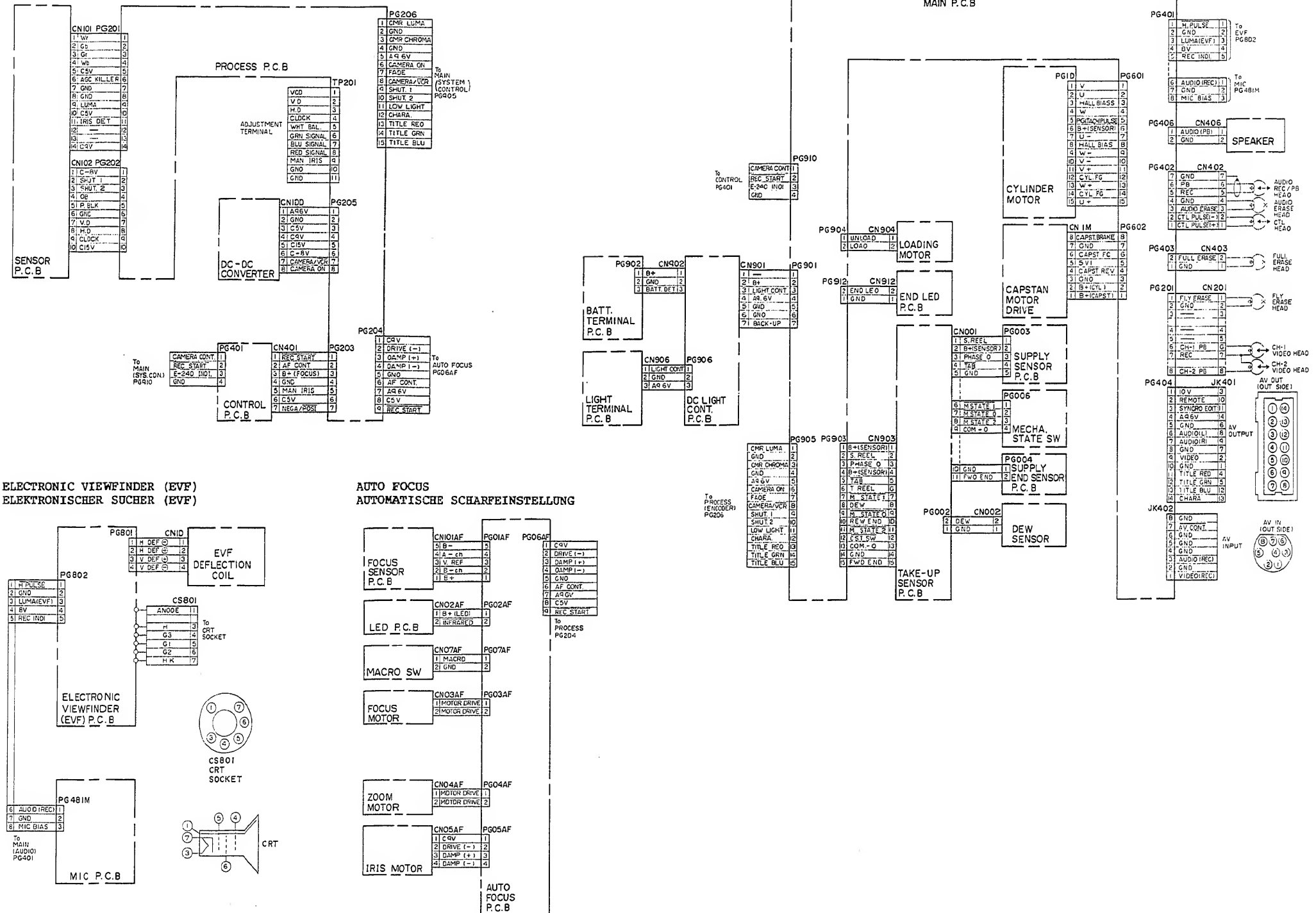
- (1) (2) (3) (4)



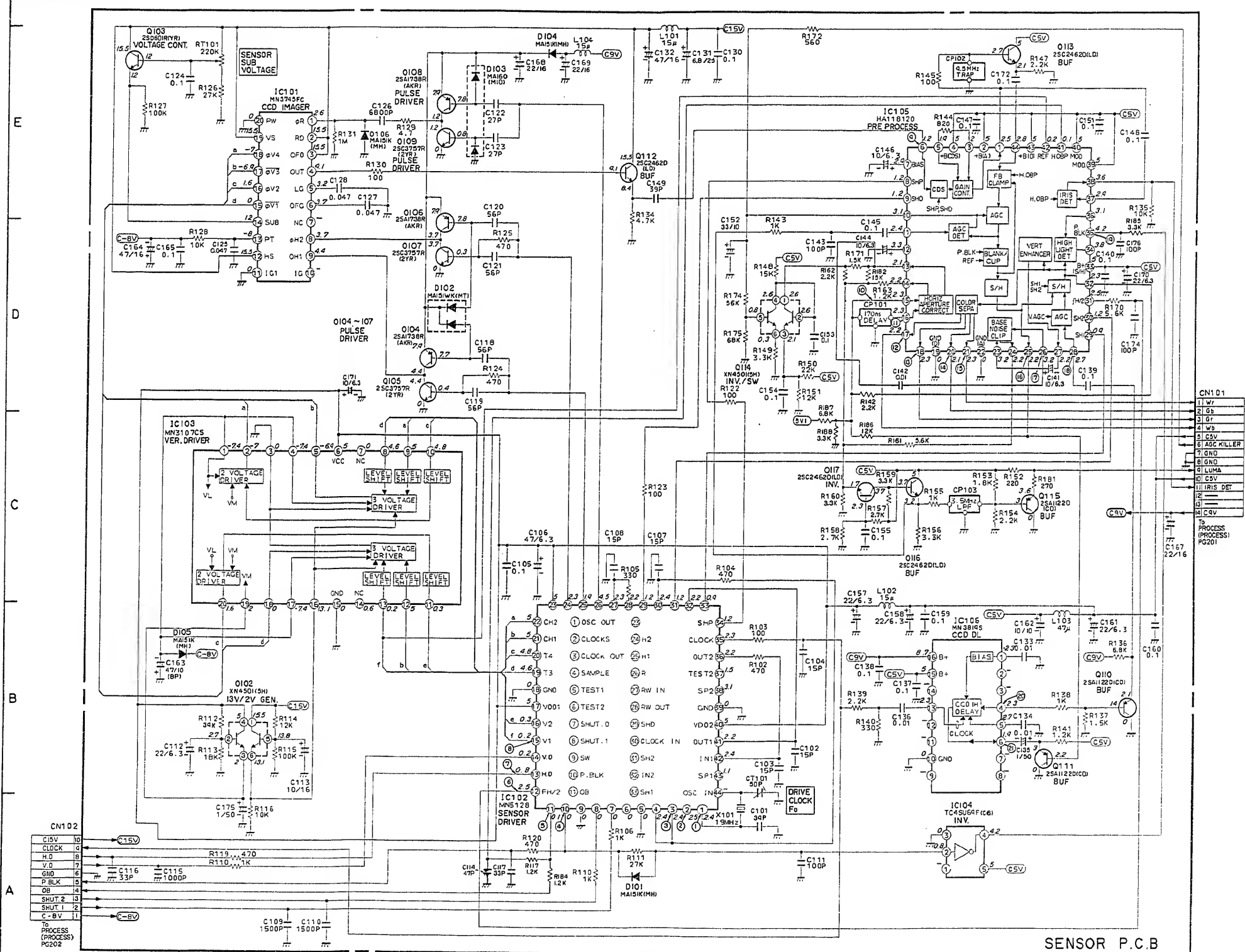
Model names VM-2300E/2380E specified in the schematic and circuit board diagrams are wrong. The correct model names are VM-2400E/2480E.

CAMERA
KAMERA

VTR
VIDEOREKORDER

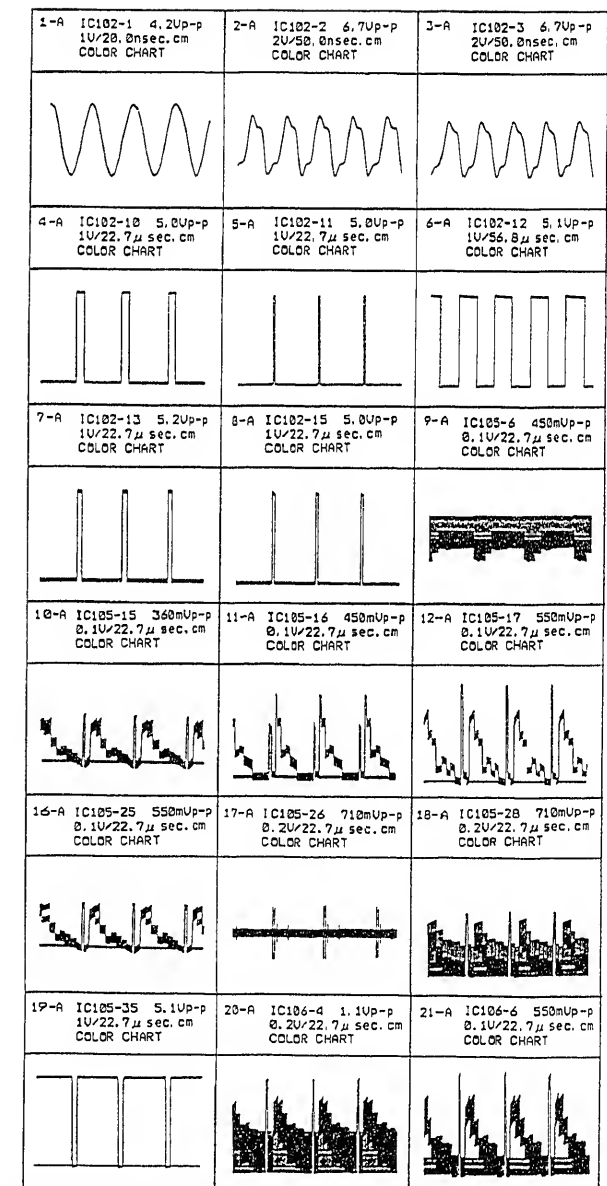
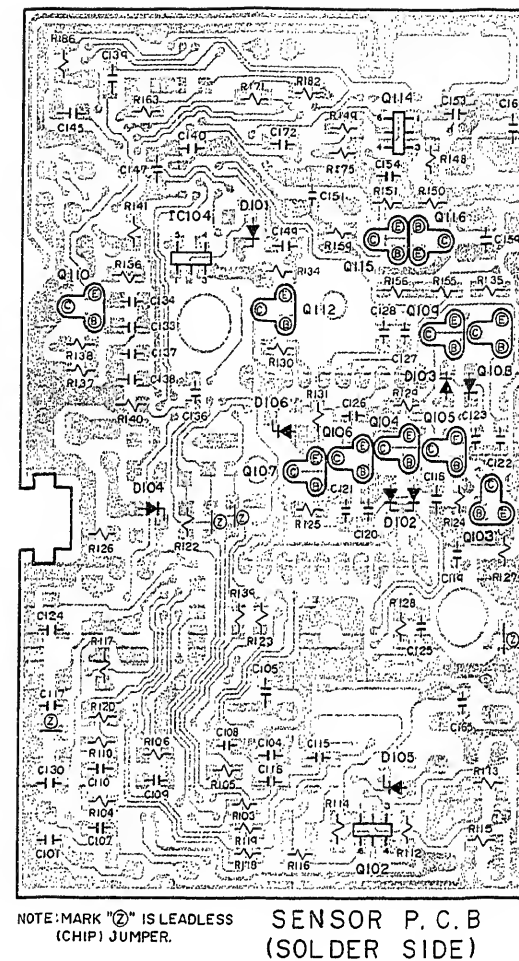
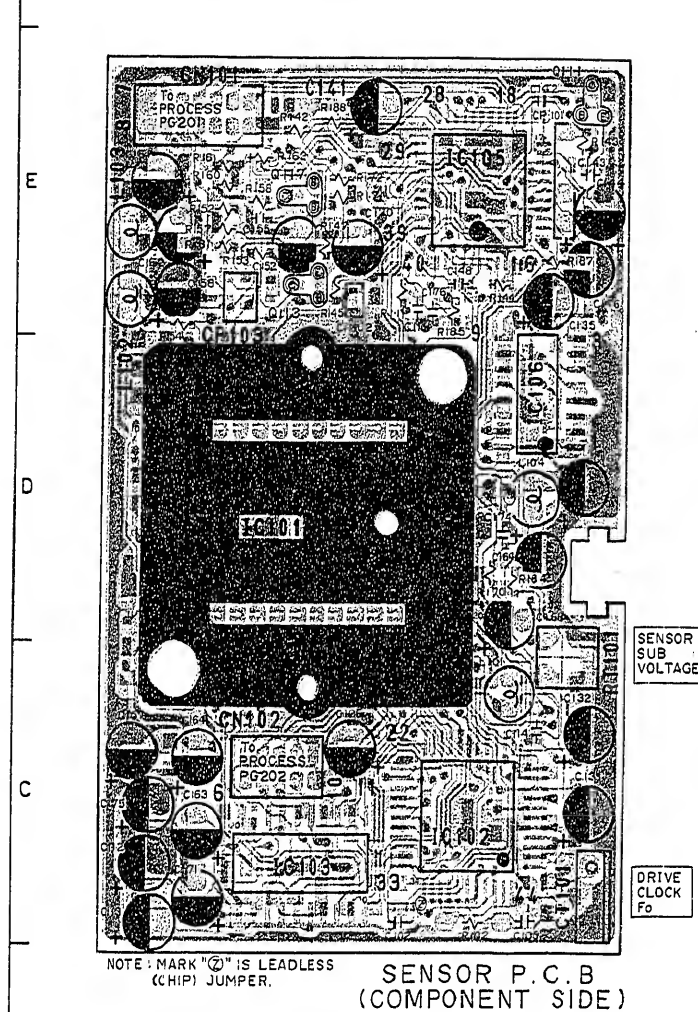


SENSOR SCHEMATIC
SENSOR-SCHALTPLAN



SENSOR P.C.B

SENSOR CIRCUIT BOARD
SENSOR-LEITERPLATTE



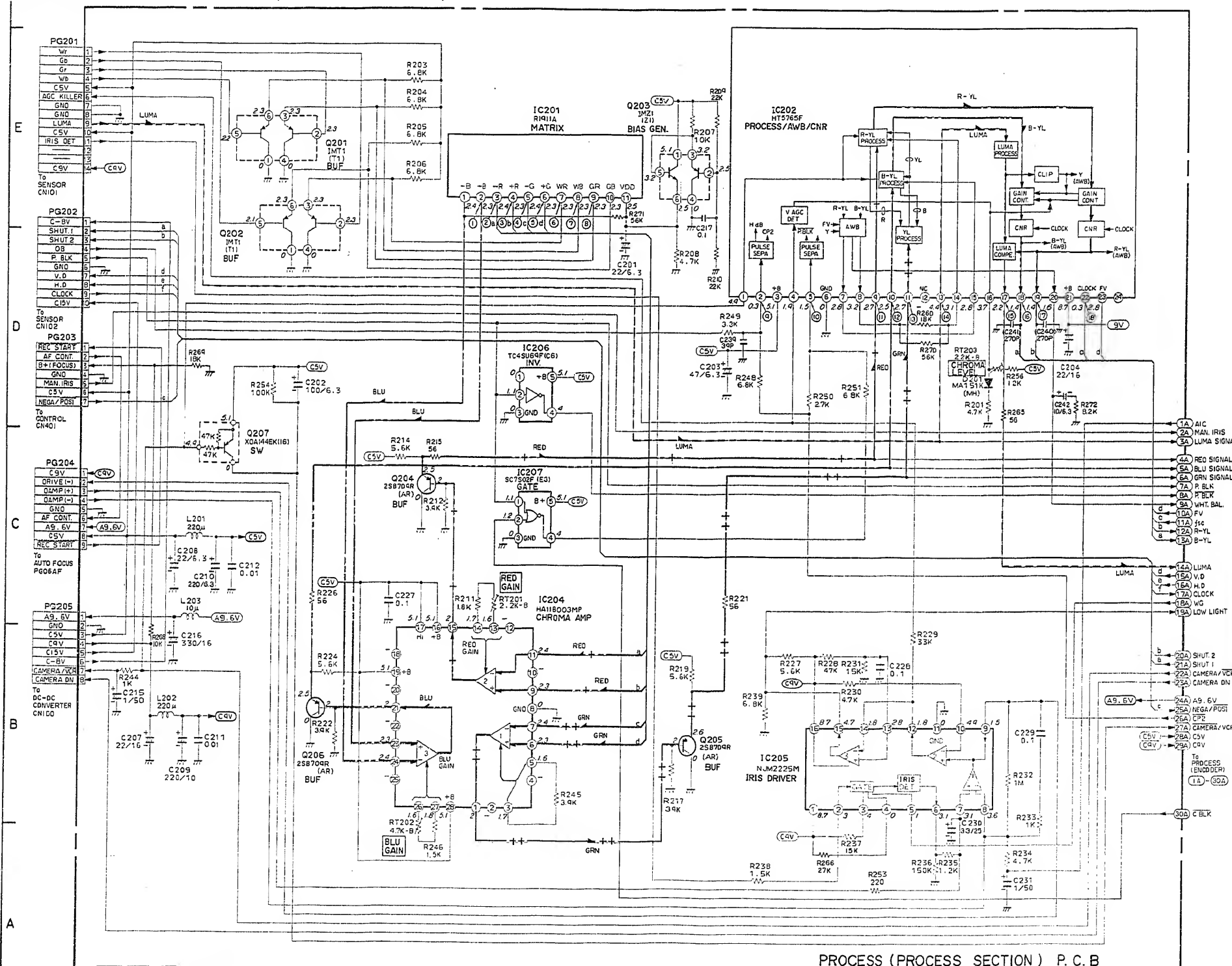
⬆ : Soldered side
⬆ : Parts side

⬆ : Soldered side

SCHEMATIC	PAGE	SCHEMATIC	PAGE
AUTO FOCUS, LED	5-19	FOCUS SENSOR	5-18
AUDIO	5-35	MIC	5-20
BATT. -/LIGHT - TERMINAL	5-19	LUMINANCE	5-29
CAPSTAN MOTOR	5-26	PROCESS	5-11
CONTROL	5-16	PRE AMP	5-27
CHROMA	5-28	SENSOR	5-7
CYL. MOTOR DRIVE	5-26	SYSTEM CONTROL	5-21
DC-DC CONVERTER	5-39	SWITCHING REGULATOR	5-25
DC LIGHT CONT.	5-19	SERVO	5-23
ENCORDER	5-15	TROUBLE SENSOR	5-37
ELECTRONIC VIEWFINDER, INDI.	5-17		

PROCESS (PROCESS SECTION) SCHEMATIC
VERARBEITUNGSSCHALTREIS-SCHALTPLAN (VERARBEITUNGSABSCHNITT)

SCHEMATIC	PAGE
AUTO FOCUS, LED	5-19
AUDIO	5-35
BATT. -/LIGHT - TERMINAL	5-19
CAPSTAN MOTOR	5-26
CONTROL	5-16
CHROMA	5-28
CYL. MOTOR DRIVE	5-26
DC-DC CONVERTER	5-39
DC LIGHT CONT.	5-19
ENCODER	5-15
ELECTRONIC VIEWFINDER, IND.	5-17
FOCUS SENSOR	5-20
MIC	5-29
LUMINANCE	5-11
PROCESS	5-27
PRE AMP	5-21
SENSOR	5-7
SYSTEM CONTROL	5-21
SWITCHING REGULATOR	5-25
SERVO	5-23
TROUBLE SENSOR	5-37



PROCESS (PROCESS SECTION) P.C.B

--- LUMA SIGNAL --- R-YL SIGNAL --- B-YL SIGNAL --- RED SIGNAL
 --- GRN SIGNAL --- BLU SIGNAL

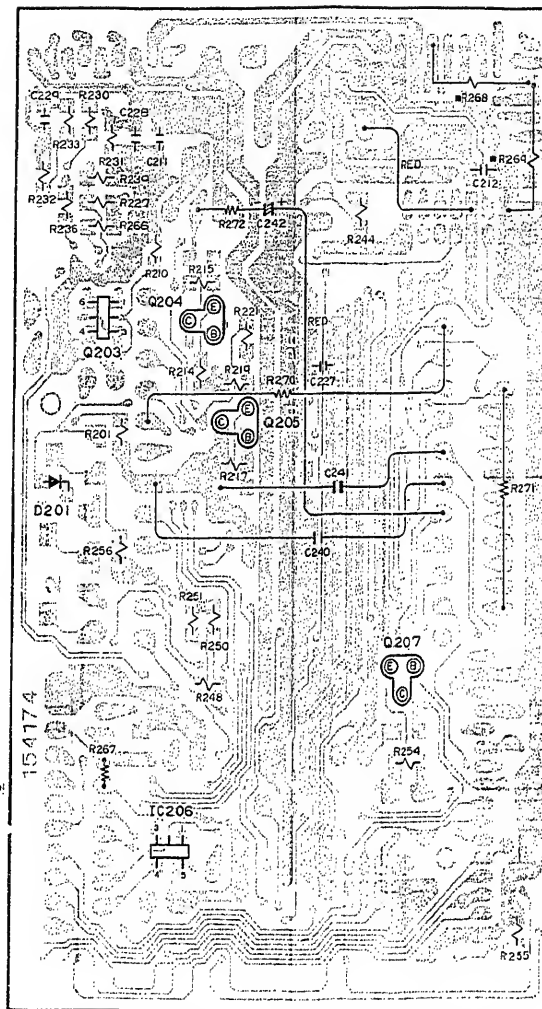
RM201-1
: LUMA SETUP





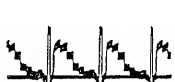


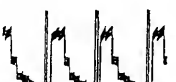


RM201-2
: GRM SETUP

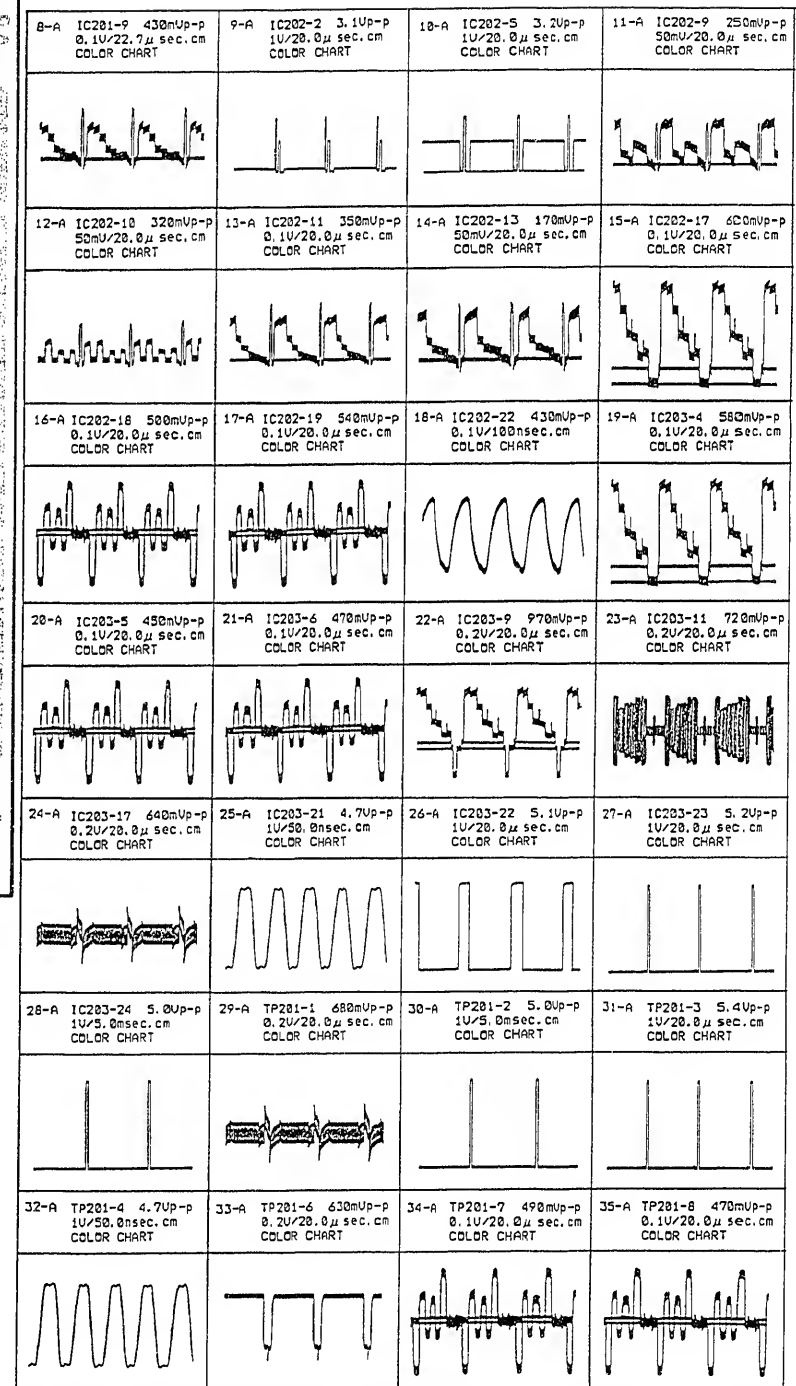
RM201-3
: BLU SETUP

RM201-4
: RED SETUP

RM201-5
: AIC



<p>  : Soldered side  : Parts side </p>		<p>  : Soldered side </p>			
<p> 1-A IC201-2 570mUp-p 0.1u/22.7u sec.cm COLOR CHART </p> 					
<p> 2-A IC201-3 570mUp-p 0.1u/22.7u sec.cm COLOR CHART </p> 	<p> 3-A IC201-4 570mUp-p 0.1u/22.7u sec.cm COLOR CHART </p> 	<p> 4-A IC201-5 570mUp-p 0.1u/22.7u sec.cm COLOR CHART </p> 	<p> 5-A IC201-6 550mUp-p 0.1u/22.7u sec.cm COLOR CHART </p> 	<p> 6-A IC201-7 380mUp-p 0.1u/22.7u sec.cm COLOR CHART </p> 	<p> 7-A IC201-8 540mUp-p 0.1u/22.7u sec.cm COLOR CHART </p> 



[illegible]

PG401

CAMERA CONT	1
REC START	2
E-240 INCL	3
GND	4

PG203

REC START	1
AF CONT	2
B+ (FOCUS)	3
GND	4
IRIS	5
MAN. IRIS	6
C5V	7
IRISGA/POS1	8

CN401

REC START	1
AF CONT	2
B+ (FOCUS)	3
GND	4
IRIS	5
MAN. IRIS	6
C5V	7
IRISGA/POS1	8

SW401 FADE
SW402 REVIEW
SW403 TITLE
SW404 DATE/TIME
SW405 RESET
SW406 INDEX MEMORY
SW407 DISPLAY
SW408 TIMER
SW409 LAPSE
SW410 SHUTTER
SW411 SHIFT
SW412 SET DATE/TIME
SW413 SET DATE/TIME

R401 1K
R402 820
R403 1K
R404 1K
R405 100
R406 220
R407 1K
R408 150
R409 150
R410 150
R411 2K
R412 2K
R413 33K
R414 34K
R415 56K
R416 56K
R417 820
R418 10K
R419 18K
R420 680
R421 39K
R422 3.3K

RV401 10K-A
IRIS

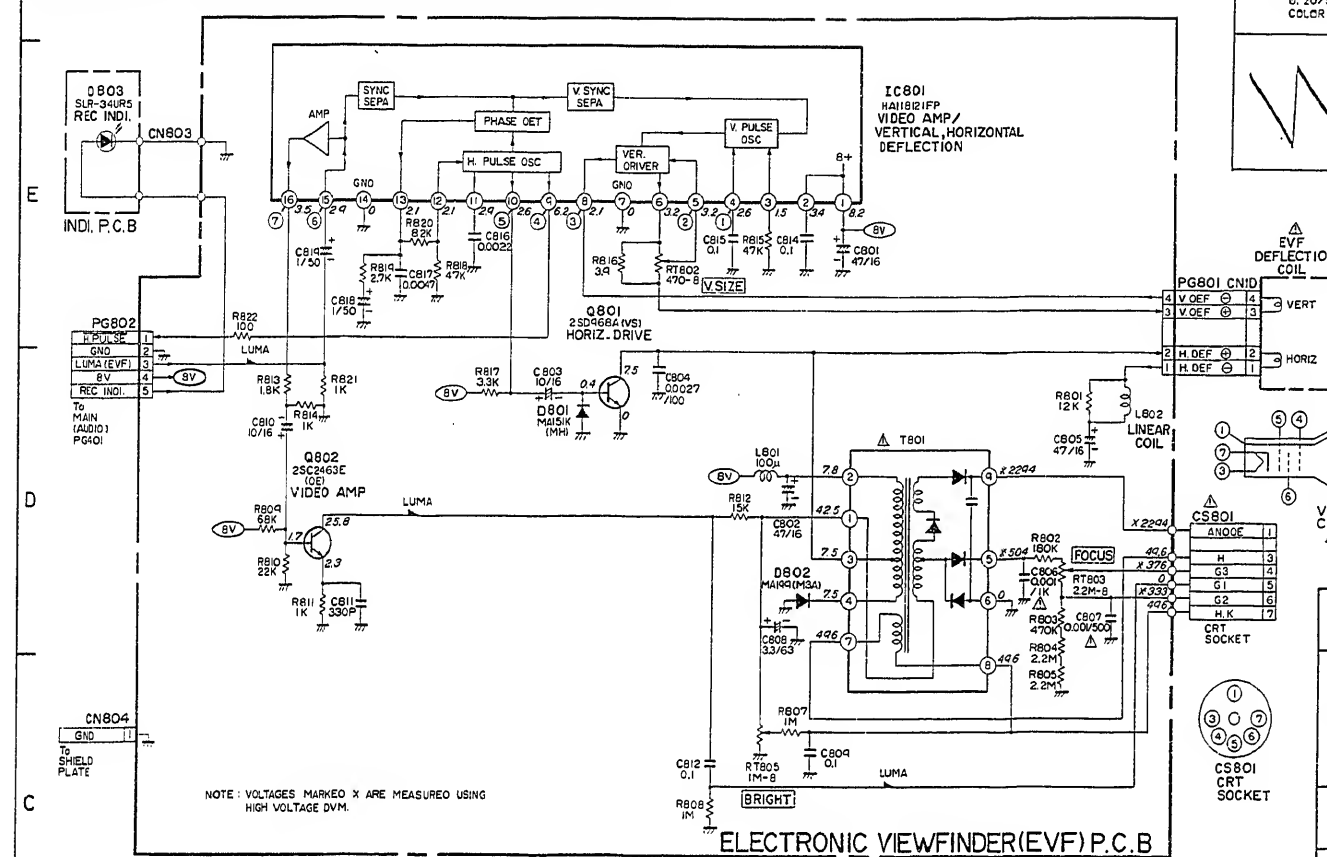
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SW617 FOCUS

NOTE: MARK "Z" IS LEADLESS (CHIP) JUMPER.

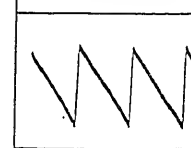
CONTROL P.C.B

SCHEMATIC	PAGE	SCHEMATIC	PAGE
AUTO FOCUS, LED	5-19	FOCUS SENSOR	5-
AUDIO	5-35	MIC	5-
BATT. - LIGHT - TERMINAL	5-19	LUMINANCE	5-
CASSETT MOTOR	5-19	PROCESS	5-
CHROMA	5-16	PRIE AMP	5-
CLOCK	5-28	SENSOR	5-
CYL. MOTOR DRIVE	5-26	SYS CONTROL	5-
DC-DC CONVERTER	5-39	SWITCHING REGULATOR	5-
DC LIGHT CONT.	5-19	SERVO	5-
ENCODER	5-15	TROUBLE SENSOR	5-
ELECTRONIC VIEWFINDER (INT)	5-17		

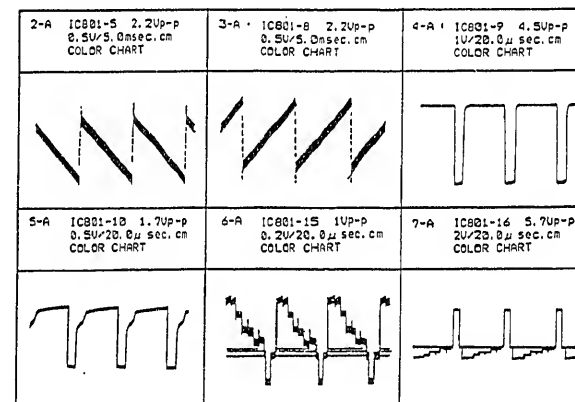
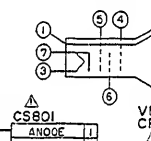
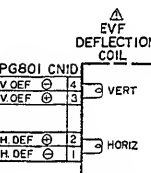
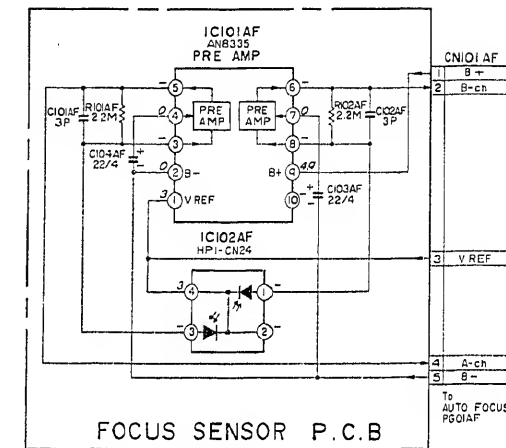
ELECTRONIC VIEWFINDER (EVF), INDI. SCHEMATIC
SCHALTPLAN DES ELECTRONISCHEN SUCHERS (EVF) UND DER ANZEIGE



1-A IC801-4 900mVp-p
0.2u/5.0msec. cm
COLOR CHART

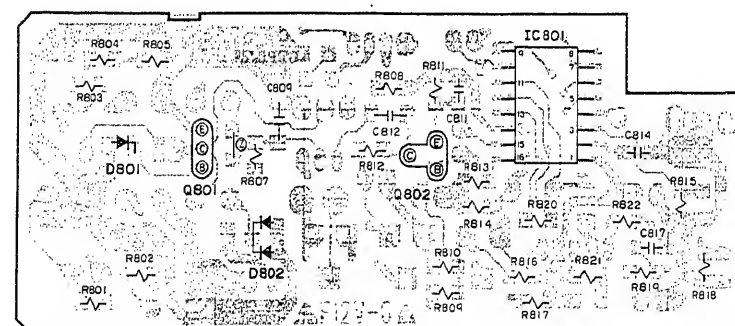
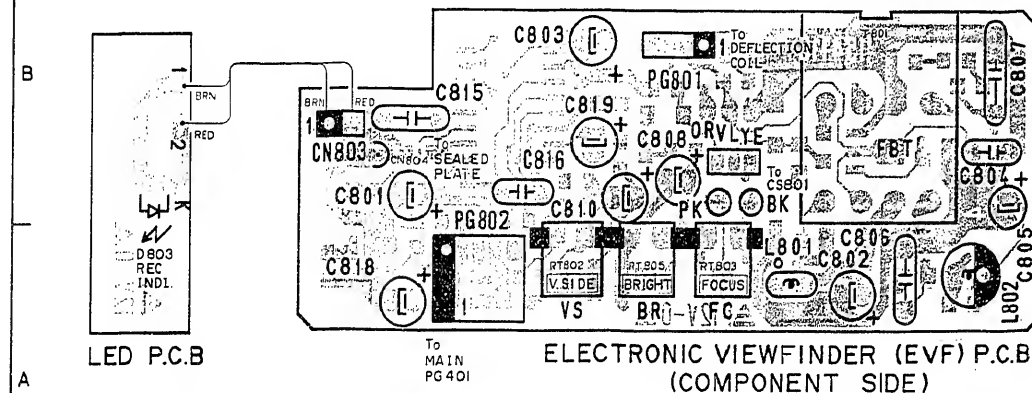


FOCUS SENSOR SCHEMATIC (Reference)
FOKUSSENSOR-SCHALTPLAN (Referenz)



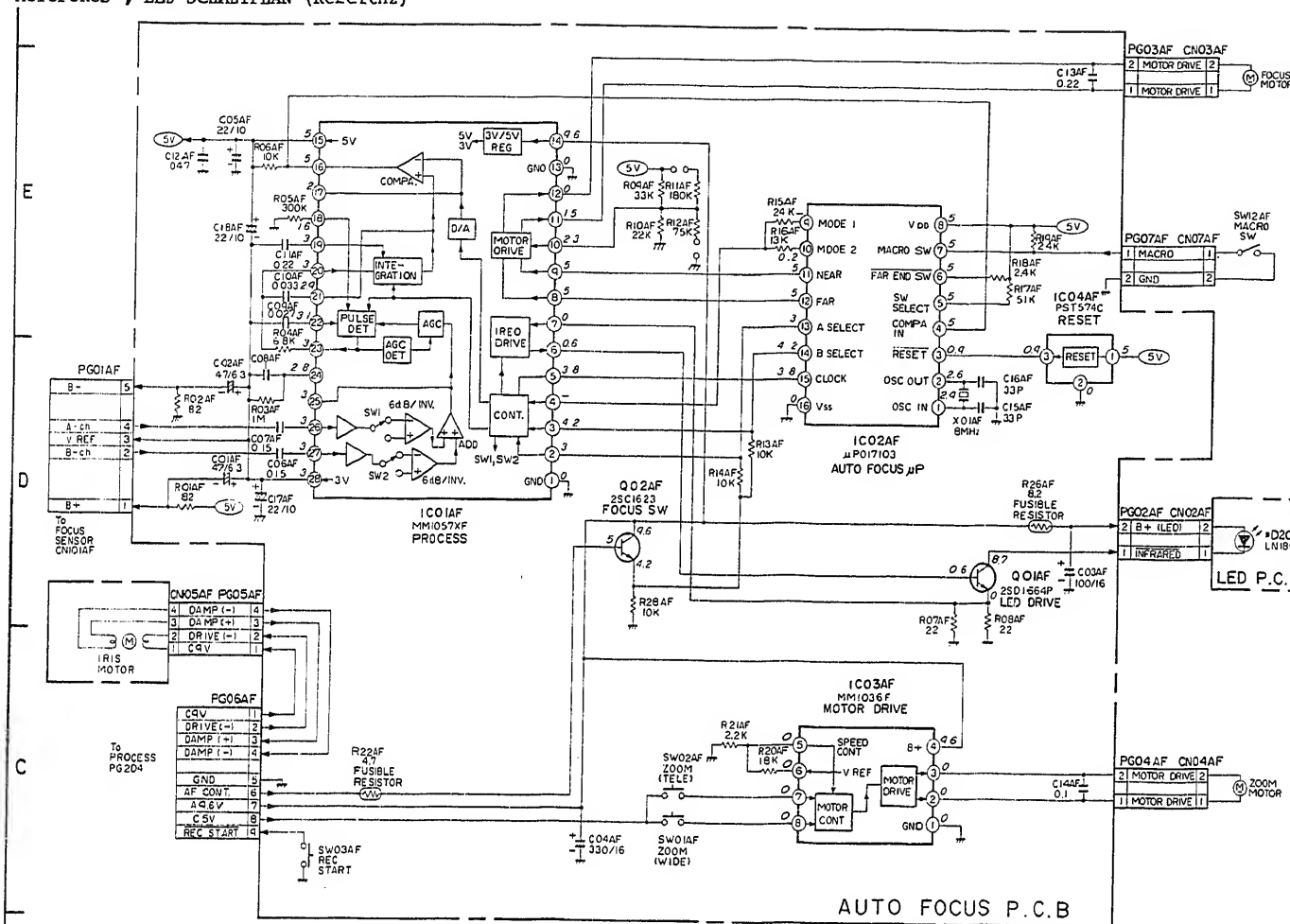
SCHEMATIC	PAGE
AUTO FOCUS, LED	5-19
AUDIO	5-19
DATT. -/LIGHT - TERMINAL	5-19
CAPSTAN MOTOR	5-19
CONTROL	5-19
CHROMA	5-19
DYL. MOTOR DRIVE	5-19
DC-DC CONVERTER	5-19
DC LIGHT CONT.	5-19
ENCODER	5-19
ELECTRONIC VIEWFINDER, INDI.	5-17
FOCUS SENSOR	5-18
HIC	5-20
LUMINANCE	5-20
PROCESS	5-11
PRE AMP	5-27
SENSOR	5-7
SYSTEM CONTROL	5-21
SWITCHING REGULATOR	5-25
SERVO	5-23
TROUBLE SENSOR	5-37

ELECTRONIC VIEWFINDER (EVF), INDI. CIRCUIT BOARD
LEITERPLATTE DES ELECTRONISCHEN SUCHERS (EVF) UND DER ANZEIGE



NOTE: MARK "Q" IS LEADLESS (CHIP) JUMPER.

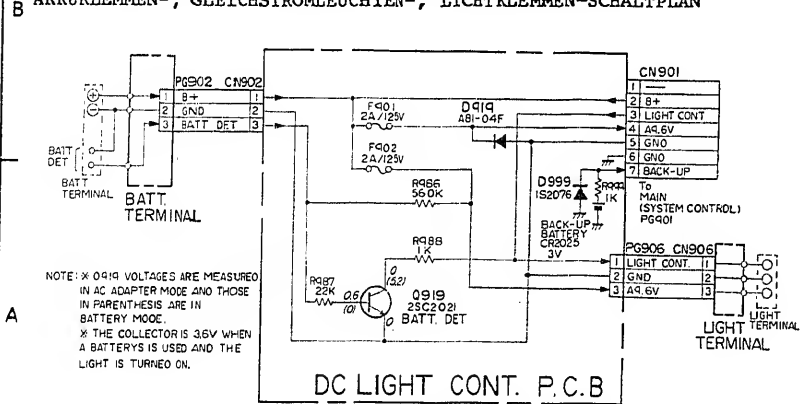
AUTO FOCUS, LED SCHEMATIC (Reference)
AUTOFOKUS-, LED-SCHALTPLAN (Referenz)



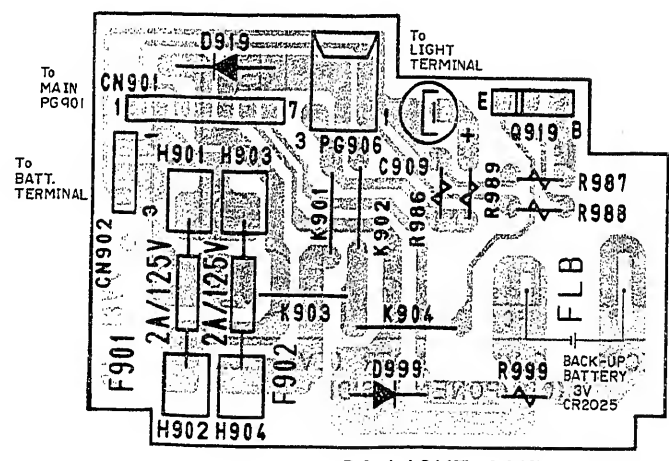
AUTO FOCUS P.C.B

DC LIGHT CONT. CIRCUIT BOARD
GLEICHSTROMLEUCHTEN-LEITERPLATTE

BATT. TERMINAL, DC LIGHT CONT., LIGHT TERMINAL SCHEMATIC
AKKUKLEMMEN-, GLEICHSTROMLEUCHTEN-, LICHTKLEMMEN-SCHALTPLAN

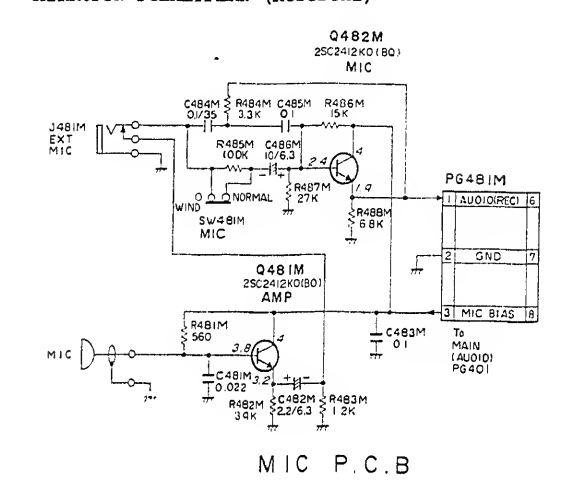


DC LIGHT CONT. P.C.B



DC LIGHT CONT. P.C.B

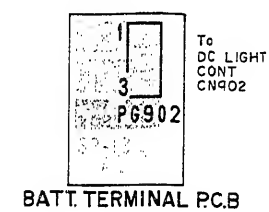
MIC SCHEMATIC (Reference)
MIKROFON-SCHALTPLAN (Referenz)



MIC P.C.B

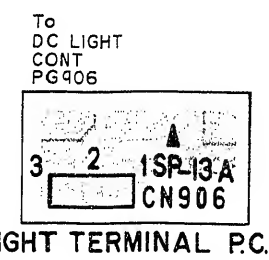
SCHEMATIC	PAGE	SCHEMATIC	PAGE
AUTO FOCUS, LED	5-18	FOCUS SENSOR	5-18
AUDIO	5-35	MIC	5-20
BATT. -/LIGHT - TERMINAL	5-19	LUMINANCE	5-20
CAPSTAN MOTOR	5-26	PROCESS	5-11
CONTROL	5-16	PRE AMP	5-27
CHROMA	5-28	SENSOR	5-7
CYL. MOTOR DRIVE	5-26	SYSTEM CONTROL	5-21
DC-DC CONVERTER	5-39	SWITCHING REGULATOR	5-25
DC LIGHT CONT.	5-19	SERVO	5-23
ENCORDER	5-15	TROUBLE SENSOR	5-37
ELECTRONIC VIEWFINDER, IND.	5-17		

BATT. TERMINAL CIRCUIT BOARD
AKKUKLEMMEN-LEITERPLATTE



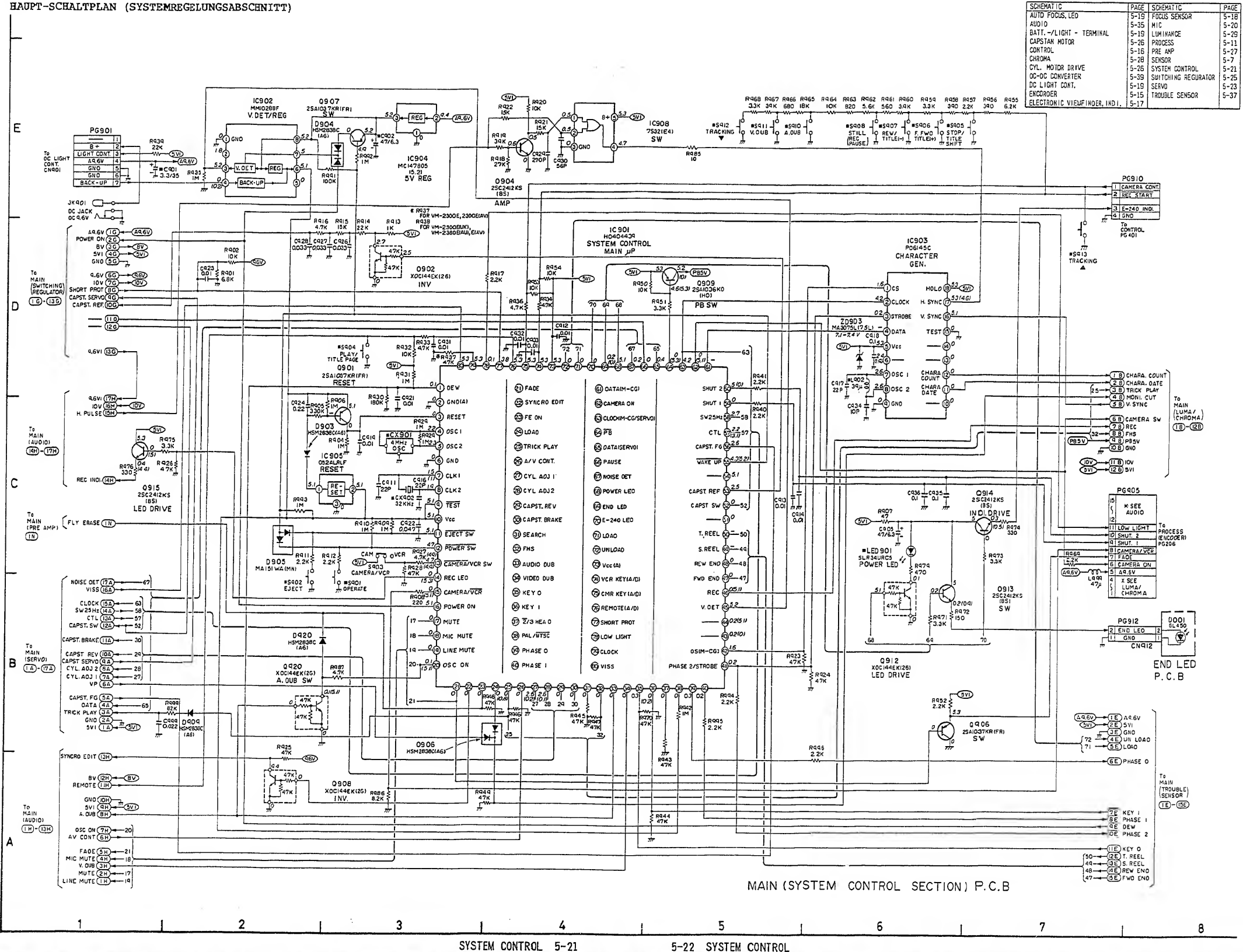
BATT. TERMINAL P.C.B

LIGHT TERMINAL CIRCUIT BOARD
LICHTKLEMMEN-LEITERPLATTE

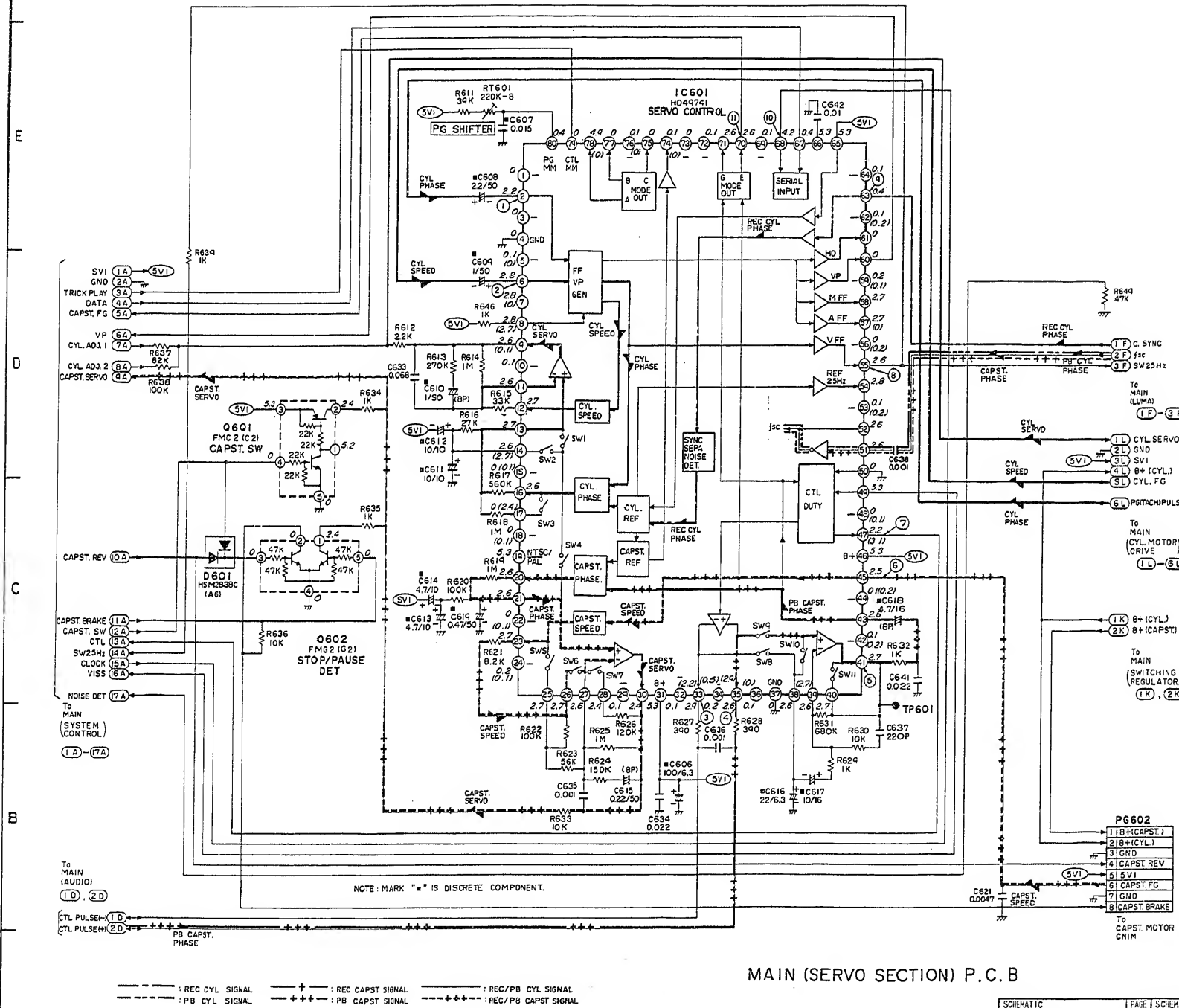


LIGHT TERMINAL P.C.B

MAIN (SYSTEM CONTROL SECTION) SCHEMATIC
HAUPT-SCHALTPLAN (SYSTEMREGELUNGSABSCHNITT)



MAIN (SERVO SECTION) SCHEMATIC
HAUPT-SCHALTPLAN (SERVOABSCHNITT)



MAIN (SERVO SECTION) P.C.B

SCHEMATIC	PAGE	SCHEMATIC	PAGE
AUDIO FOCUS LED	5-19	FOCUS SENSOR	5-19
AUDIO	5-25	MIC	5-20
BATT./LIGHT - TERMINAL	5-19	LUMINANCE	5-25
CAPSTAN MOTOR	5-25	PROCESS	5-11
CONTROL	5-15	PRE AMP	5-27
CHROMA	5-28	SENSOR	5-7
CYL MOTOR DRIVE	5-26	SYSTEM CONTROL	5-21
DC-DC CONVERTER	5-39	SWITCHING REGULATOR	5-25
DC LIGHT CONT.	5-19	SERVO	5-23
ENDORDER	5-15	TROUBLE SENSOR	5-37
ELECTRONIC VIEWFINDER, IND.	5-17		

1-A IC601-2 2.4Up-p 0.5V/10.0msec. cm REC/PLAY	2-A IC601-6 3.7Up-p 1V/1.0msec. cm REC/PLAY
3-A IC601-33 4.4Up-p 1V/10.0msec. cm REC	4-A IC601-35 2.7Up-p 0.5V/10.0msec. cm REC
5-B IC601-41 2.0Up-p 0.5V/10.0msec. cm PLAY	6-A IC601-45 5.0Up-p 1V/10.0msec. cm REC/PLAY
7-A IC601-47 5.3Up-p 1V/10.0msec. cm REC	7-B IC601-47 5.3Up-p 1V/10.0msec. cm PLAY
8-A IC601-55 5.3Up-p 1V/10.0msec. cm REC/PLAY	9-A IC601-63 4.8Up-p 1V/10.0msec. cm REC/PLAY
10-A IC601-68 5.0Up-p 1V/5.0msec. cm REC/PLAY	11-A IC601-70 5.2Up-p 1V/10.0msec. cm REC/PLAY
12-B TP603 2.0Up-p 0.5V/10.0msec. cm PLAY	

MAIN (PRE AMP SECTION) P.C.B

----- : REC LUMA SIGNAL - - - - : REC CHROMA SIGNAL - - - - : REC VIDEO SIGNAL
 ----- : PB LUMA SIGNAL - - - - : PB CHROMA SIGNAL - - - - : PB VIDEO SIGNAL

5

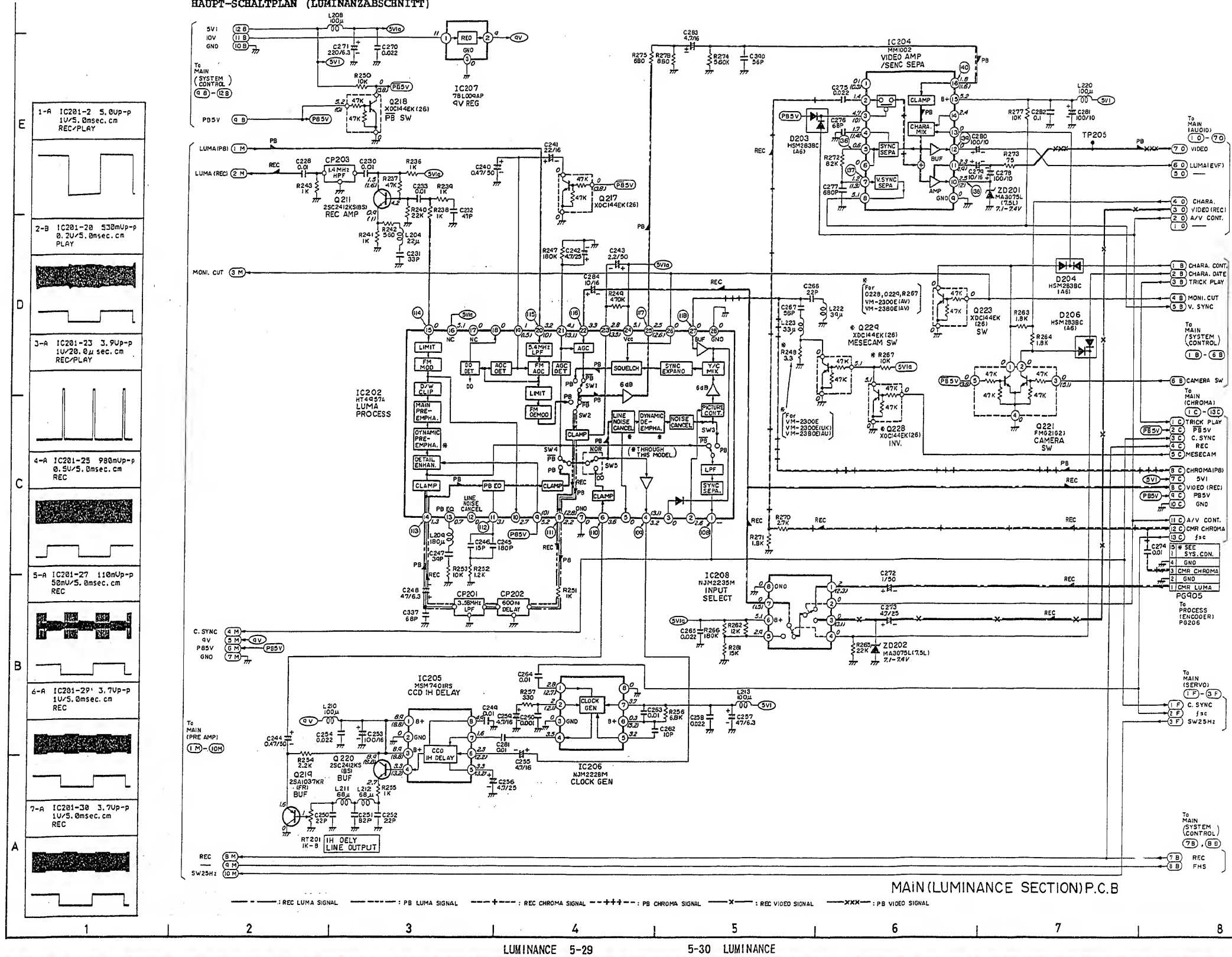
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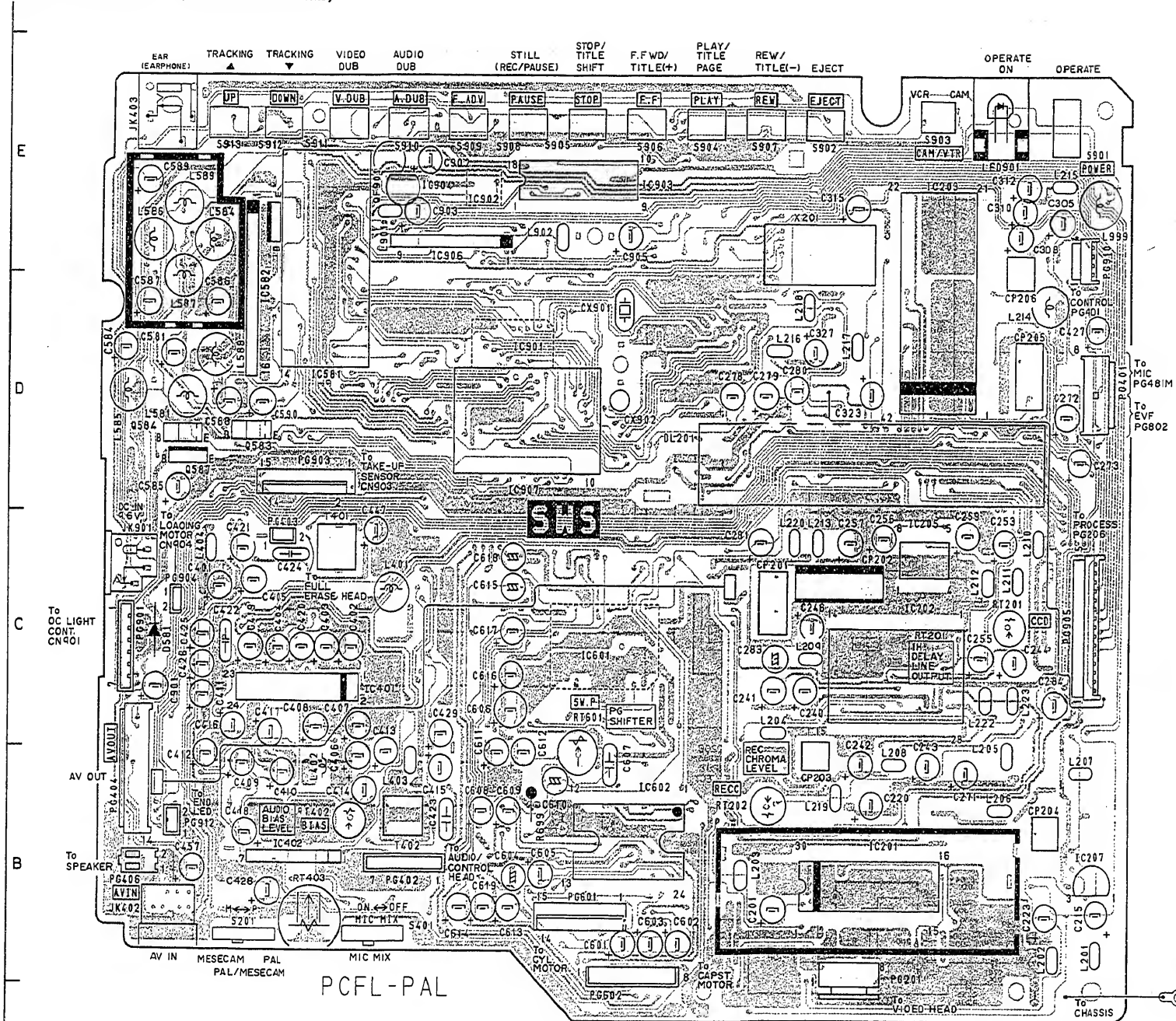
8

SCHEMATIC	PAGE	SCHEMATIC	PAGE
AUTO FOCUS, LEO	5-19	FOCUS SENSOR	5-18
AUDIO	5-35	MIC	5-20
BATT. -/LIGHT - TERMINAL	5-19	LUMINANCE	5-29
CAPSTAN MOTOR	5-26	PROCESS	5-11
CONTROL	5-16	PRE AMP	5-27
CHROMA	5-28	SENSOR	5-7
CYL. MOTOR DRIVE	5-26	SYSTEM CONTROL	5-21
OC-OC CONVERTER	5-39	SWITCHING REGULATOR	5-25
DC LIGHT CONT.	5-19	SERVO	5-23
ENCODER	5-15	TACHOLE SENSOR	5-37
ELECTRONIC VIEWFINDER, INOL.	5-17		

MAIN (LUMINANCE) SCHEMATIC
HAUPT-SCHALTPLAN (LUMINANZABSCHNITT)

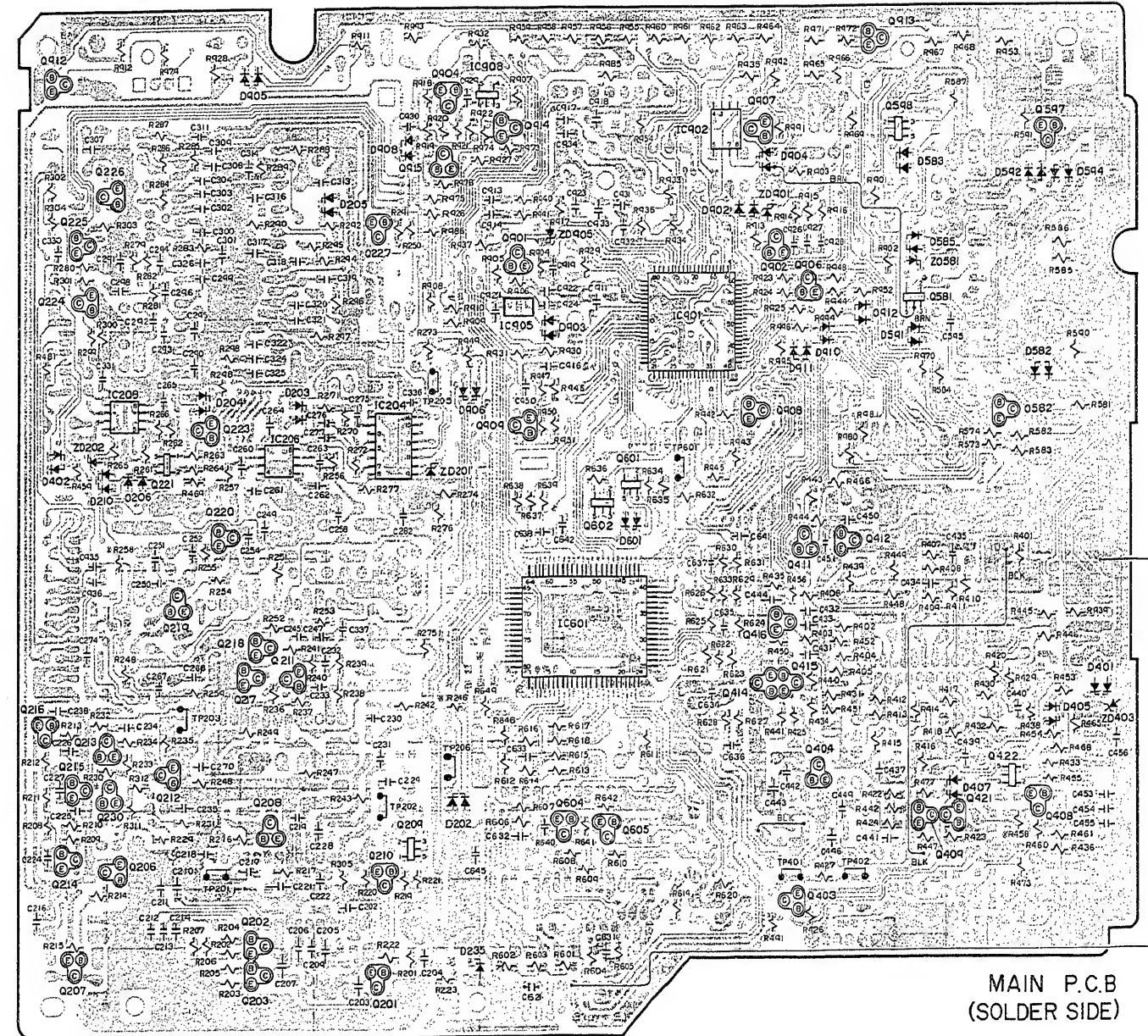
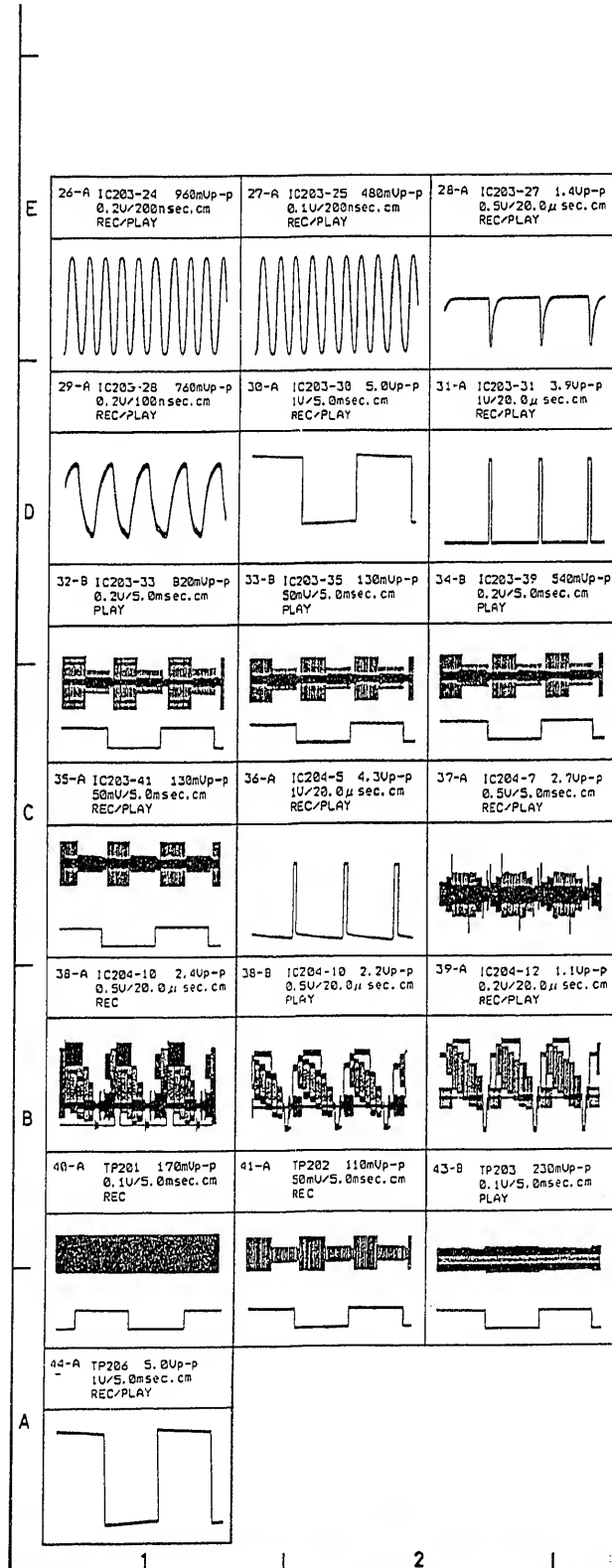


MAIN CIRCUIT BOARD (COMPONENT SIDE)
HAUPT-LEITERPLATTE (BESTÜCKUNGSSEITE)



B-A IC202-1 3.9Up-p 1U/20.0μ sec. cm REC/PLAY	9-A IC202-4 550mUp-p 0.1U/20.0μ sec. cm REC/PLAY	10-A IC202-6 560mUp-p 0.1U/20.0μ sec. cm REC/PLAY
11-A IC202-8 1.0Up-p 0.2U/20.0μ sec. cm REC	11-B IC202-8 2.0Up-p 0.5U/20.0μ sec. cm PLAY	12-A IC202-11' 1.2Up-p 0.2U/20.0μ sec. cm REC
12-B IC202-11 580mUp-p 0.1U/20.0μ sec. cm PLAY	13-A IC202-14 510mUp-p 0.1U/20.0μ sec. cm REC	13-B IC202-14 300mUp-p 0.1U/20.0μ sec. cm PLAY
14-A IC202-15 1.5Up-p 0.5U/5.0msec. cm REC	15-B IC202-20 240mUp-p 0.1U/5.0msec. cm PLAY	16-A IC202-22 500mUp-p 0.1U/20.0μ sec. cm REC
17-A IC202-25 2.3Up-p 0.5U/20.0μ sec. cm REC/PLAY	18-B IC202-27 260mUp-p 0.1U/5.0msec. cm PLAY	19-A IC203-1 260mUp-p 0.1U/5.0msec. cm REC/PLAY
20-A IC203-4 260mUp-p 0.1U/5.0msec. cm REC	21-A IC203-6 310mUp-p 0.1U/5.0msec. cm REC/PLAY	22-A IC203-B 530mUp-p 0.2U/5.0msec. cm REC
23-B IC203-10 340mUp-p 0.2U/5.0msec. cm PLAY	24-A IC203-13 830mUp-p 50mU/5.0msec. cm REC	25-A IC203-23 1.2Up-p 0.2U/200msec. cm REC/PLAY

MAIN CIRCUIT BOARD (SOLDER SIDE)
HAUPT-LEITERPLATTE (LEITERBAHNSEITE)



MAIN P.C.B
(SOLDER SIDE)

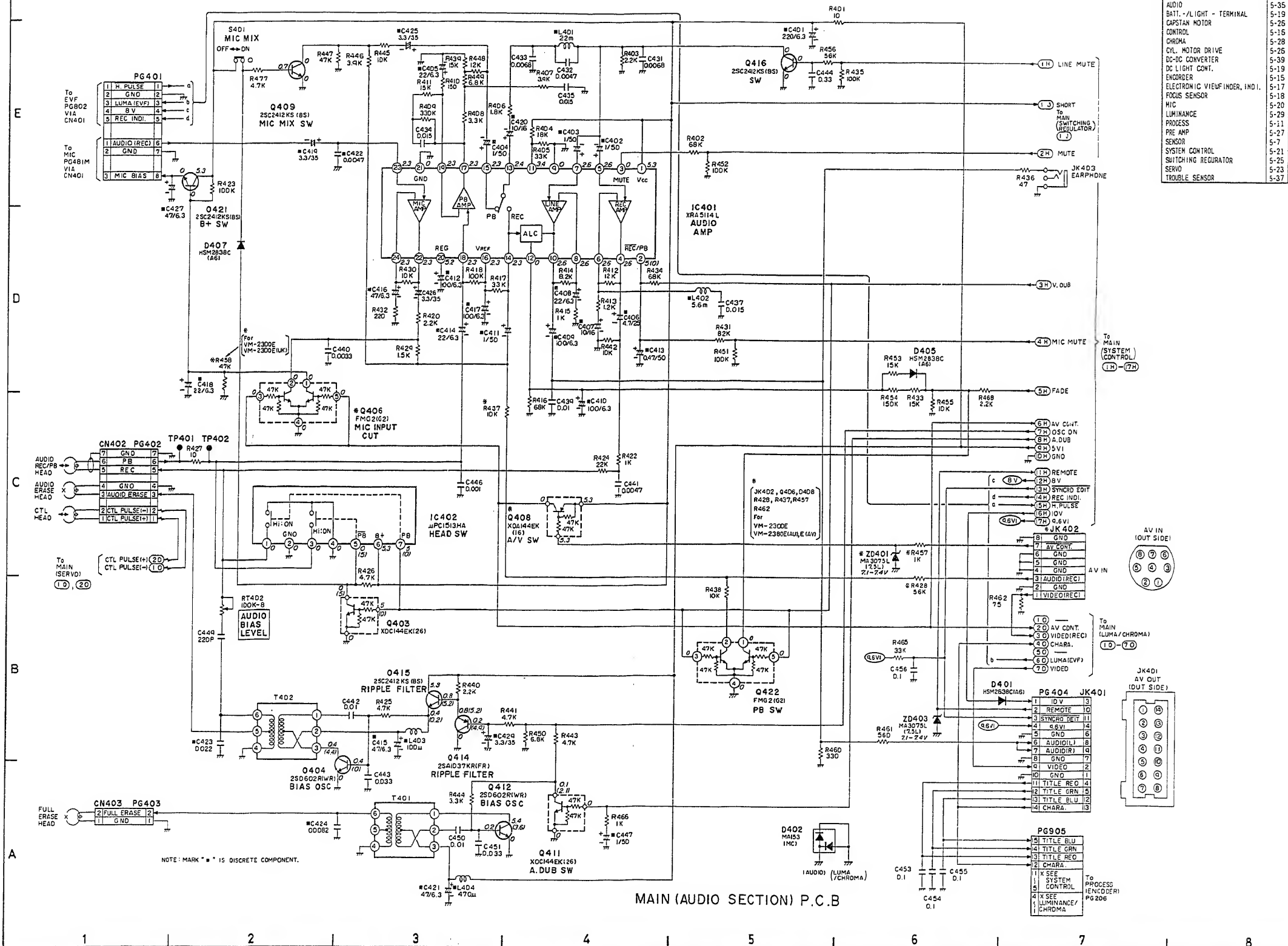
VN-2300E PARTS ASSIGNMENT FOR DIFFERENT DESTINATIONS

	R267	R283	D279	Q276	R248	S201	J4002	R463	R437	R438	R457	Q405	R406	S204S1	R458
VN-2300E	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
VN-2300E(4V)	o	o	o	o	x	o	o	o	o	o	o	o	o	o	x
VN-2300E(4K3)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
VN-2300E(4U3)	x	x	x	x	x	o	o	o	o	o	o	o	o	o	x
VN-2300E(4V)	o	o	o	o	x	o	o	o	o	o	o	o	o	o	x

o: PROVIDED x: NOT PROVIDED

...: Soldered side

MAIN (AUDIO SECTION) SCHEMATIC
HAUPT-SCHALTPLAN (AUDIOABSCHNITT)



SCHEMATIC	PAGE
AUTO FOCUS, LED	5-19
AUDIO	5-35
BATT. -/LIGHT - TERMINAL	5-19
CAPSTAN MOTOR	5-25
CONTROL	5-15
CHROMA	5-28
CYL. MOTOR DRIVE	5-25
DC-DC CONVERTER	5-39
DC LIGHT CONT.	5-19
ENCORDER	5-15
ELECTRONIC VIEWFINDER, IND.	5-17
FOCUS SENSOR	5-18
MIC	5-20
LUMINANCE	5-29
PROCESS	5-11
PRE AMP	5-27
SENSOR	5-7
SYSTEM CONTROL	5-21
SWITCHING REGULATOR	5-25
SERVO	5-23
TROUBLE SENSOR	5-37

MAIN (AUDIO SECTION) P.C.B

The schematic diagram illustrates the electrical layout of the TAKE-UP SENSOR P.C.B. It features several integrated circuits and discrete components:

- IC906 TA7201S LOADING MOTOR DRIVE:** This IC controls the loading motor. It includes a feedback loop with a 5V REF and a 5V1 diode. The motor is connected to the UNLOAD and LOAD pins of the CN904 connector.
- IC907 8X7546F TROUBLE DET:** This IC monitors the system for trouble. It has four comparators with 2.5V reference voltages. The outputs are connected to the T REEL, S REEL, REW END, and FWD END pins of the CN903 connector.
- IC901 ICP-N20 CIRCUIT PROTECT:** This IC provides overcurrent protection for the motor drive. It is connected to the 5V1 supply and the motor drive circuit.
- IC902 ON2170LH TAKE-UP REEL SENSOR:** This sensor detects the take-up reel position. It is connected to the 5V1 supply and the REEL SENSOR pin of the CN903 connector.
- IC903 PT483F1 TAKE-UP END SENSOR:** This sensor detects the take-up end position. It is connected to the 5V1 supply and the TAKE-UP END pin of the CN903 connector.
- IC904 CASSETTE SW:** This switch is used to select between different sensor inputs. It is connected to the 5V1 supply and the CASSETTE SW pin of the CN903 connector.
- Other components:** The circuit includes various resistors (R403, R401, R402, R404, R405, R406, R407, R408, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418, R419, R420, R421, R422, R423, R424, R425, R426, R427, R428, R429, R430, R431, R432, R433, R434, R435, R436, R437, R438, R439, R440, R441, R442, R443, R444, R445, R446, R447, R448, R449, R450, R451, R452, R453, R454, R455, R456, R457, R458, R459, R460, R461, R462, R463, R464, R465, R466, R467, R468, R469, R470, R471, R472, R473, R474, R475, R476, R477, R478, R479, R480, R481, R482, R483, R484, R485, R486, R487, R488, R489, R490, R491, R492, R493, R494, R495, R496, R497, R498, R499, R500, R501, R502, R503, R504, R505, R506, R507, R508, R509, R510, R511, R512, R513, R514, R515, R516, R517, R518, R519, R520, R521, R522, R523, R524, R525, R526, R527, R528, R529, R530, R531, R532, R533, R534, R535, R536, R537, R538, R539, R540, R541, R542, R543, R544, R545, R546, R547, R548, R549, R550, R551, R552, R553, R554, R555, R556, R557, R558, R559, R560, R561, R562, R563, R564, R565, R566, R567, R568, R569, R570, R571, R572, R573, R574, R575, R576, R577, R578, R579, R580, R581, R582, R583, R584, R585, R586, R587, R588, R589, R590, R591, R592, R593, R594, R595, R596, R597, R598, R599, R600, R601, R602, R603, R604, R605, R606, R607, R608, R609, R610, R611, R612, R613, R614, R615, R616, R617, R618, R619, R620, R621, R622, R623, R624, R625, R626, R627, R628, R629, R630, R631, R632, R633, R634, R635, R636, R637, R638, R639, R640, R641, R642, R643, R644, R645, R646, R647, R648, R649, R650, R651, R652, R653, R654, R655, R656, R657, R658, R659, R660, R661, R662, R663, R664, R665, R666, R667, R668, R669, R670, R671, R672, R673, R674, R675, R676, R677, R678, R679, R680, R681, R682, R683, R684, R685, R686, R687, R688, R689, R690, R691, R692, R693, R694, R695, R696, R697, R698, R699, R700, R701, R702, R703, R704, R705, R706, R707, R708, R709, R710, R711, R712, R713, R714, R715, R716, R717, R718, R719, R720, R721, R722, R723, R724, R725, R726, R727, R728, R729, R730, R731, R732, R733, R734, R735, R736, R737, R738, R739, R740, R741, R742, R743, R744, R745, R746, R747, R748, R749, R750, R751, R752, R753, R754, R755, R756, R757, R758, R759, R760, R761, R762, R763, R764, R765, R766, R767, R768, R769, R770, R771, R772, R773, R774, R775, R776, R777, R778, R779, R780, R781, R782, R783, R784, R785, R786, R787, R788, R789, R790, R791, R792, R793, R794, R795, R796, R797, R798, R799, R800, R801, R802, R803, R804, R805, R806, R807, R808, R809, R810, R811, R812, R813, R814, R815, R816, R817, R818, R819, R820, R821, R822, R823, R824, R825, R826, R827, R828, R829, R830, R831, R832, R833, R834, R835, R836, R837, R838, R839, R840, R841, R842, R843, R844, R845, R846, R847, R848, R849, R850, R851, R852, R853, R854, R855, R856, R857, R858, R859, R860, R861, R862, R863, R864, R865, R866, R867, R868, R869, R870, R871, R872, R873, R874, R875, R876, R877, R878, R879, R880, R881, R882, R883, R884, R885, R886, R887, R888, R889, R890, R891, R892, R893, R894, R895, R896, R897, R898, R899, R900, R901, R902, R903, R904, R905, R906, R907, R908, R909, R910, R911, R912, R913, R914, R915, R916, R917, R918, R919, R920, R921, R922, R923, R924, R925, R926, R927, R928, R929, R930, R931, R932, R933, R934, R935, R936, R937, R938, R939, R940, R941, R942, R943, R944, R945, R946, R947, R948, R949, R950, R951, R952, R953, R954, R955, R956, R957, R958, R959, R960, R961, R962, R963, R964, R965, R966, R967, R968, R969, R970, R971, R972, R973, R974, R975, R976, R977, R978, R979, R980, R981, R982, R983, R984, R985, R986, R987, R988, R989, R990, R991, R992, R993, R994, R995, R996, R997, R998, R999, R1000, R1001, R1002, R1003, R1004, R1005, R1006, R1007, R1008, R1009, R1010, R1011, R1012, R1013, R1014, R1015, R1016, R1017, R1018, R1019, R1020, R1021, R1022, R1023, R1024, R1025, R1026, R1027, R1028, R1029, R1030, R1031, R1032, R1033, R1034, R1035, R1036, R1037, R1038, R1039, R1040, R1041, R1042, R1043, R1044, R1045, R1046, R1047, R1048, R1049, R1050, R1051, R1052, R1053, R1054, R1055, R1056, R1057, R1058, R1059, R1060, R1061, R1062, R1063, R1064, R1065, R1066, R1067, R1068, R1069, R1070, R1071, R1072, R1073, R1074, R1075, R1076, R1077, R1078, R1079, R1080, R1081, R1082, R1083, R1084, R1085, R1086, R1087, R1088, R1089, R1090, R1091, R1092, R1093, R1094, R1095, R1096, R1097, R1098, R1099, R1100, R1101, R1102, R1103, R1104, R1105, R1106, R1107, R1108

PG004
Q003
To
TAKE-UP
SENSOR
CNO01
SUPPLY END
SENSOR P.C.B

Diagram of the END LED P.C.B. showing a 2-pin connector labeled CN912. Pin 1 is connected to 'To MAIN PG912' and pin 2 is connected to a ground symbol. The component is labeled 'D001'.

SAFETY
TAB SW

RESN
5001

P6003

5

To
TAKE-UP
SENSOR
CNO01

7000

SUPPLY SENSOR PCB

SCHEMATIC	PAGE
AUTO FOCUS, LED	5-18
AUDIO	5-35
BATT. -/LIGHT - TERMINAL	5-19
CAPSTAN MOTOR	5-26
CONTROL	5-16
CHROMA	5-28
CM. MOTOR DRIVE	5-26
DC-DC CONVERTER	5-36
DS LIGHT CONT.	5-19
ENCODER	5-39
ELECTRONIC VIEWFINDER, INDI.	5-17
FOCUS SENSOR	5-18
MIC	5-20
LUMINANCE	5-29
PROCESS	5-11
PRE AMP	5-27
SENSOR	5-21
SYSTEM CONTROL	5-7
SWITCHING REGULATOR	5-5
SERVO	5-23
TROUBLE SHOOTER	5-37

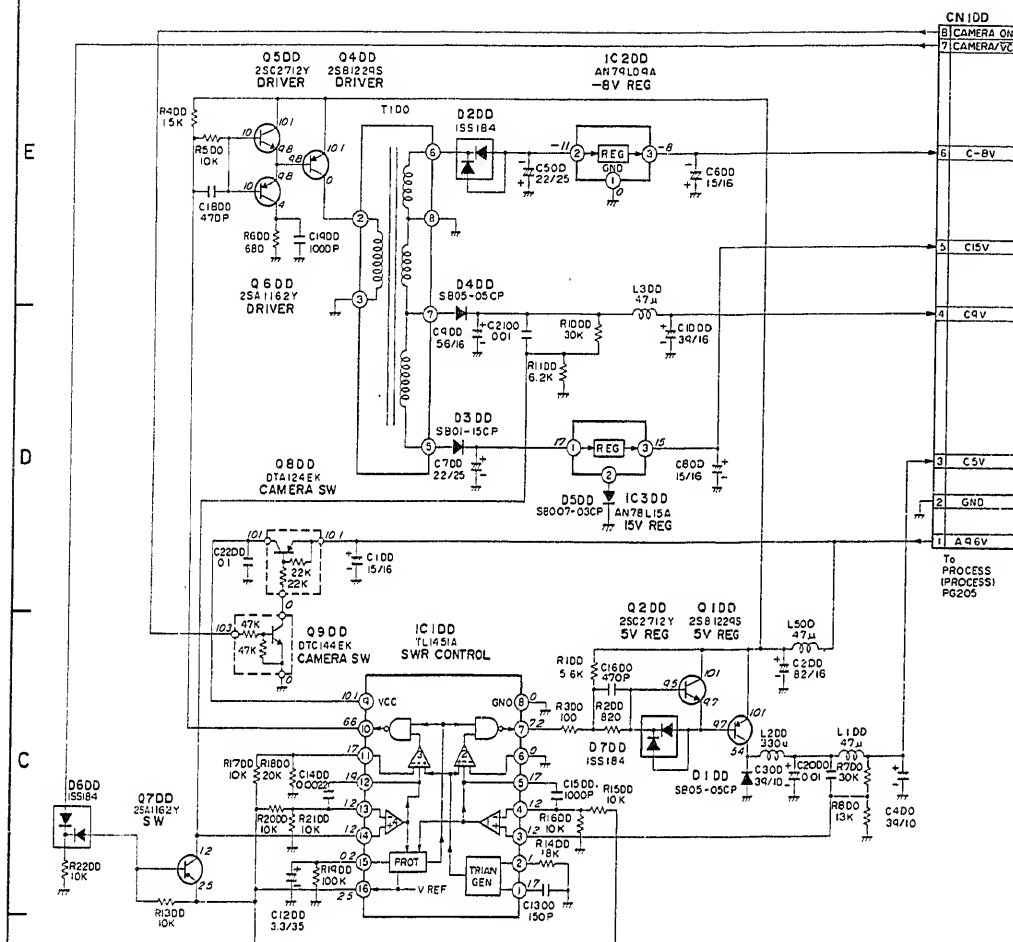
Q003
PT483F1
SUPPLY
END SENSOR

SUPPLY END
SENSOR P.C.B

Diagram of the TAKE-UP SENSOR P.C.B. showing components:

- S002
- CASSSETTE SW
- CN001
- SUPPLY END SENSOR
- P6005
- S003
- [S-VHS SW]

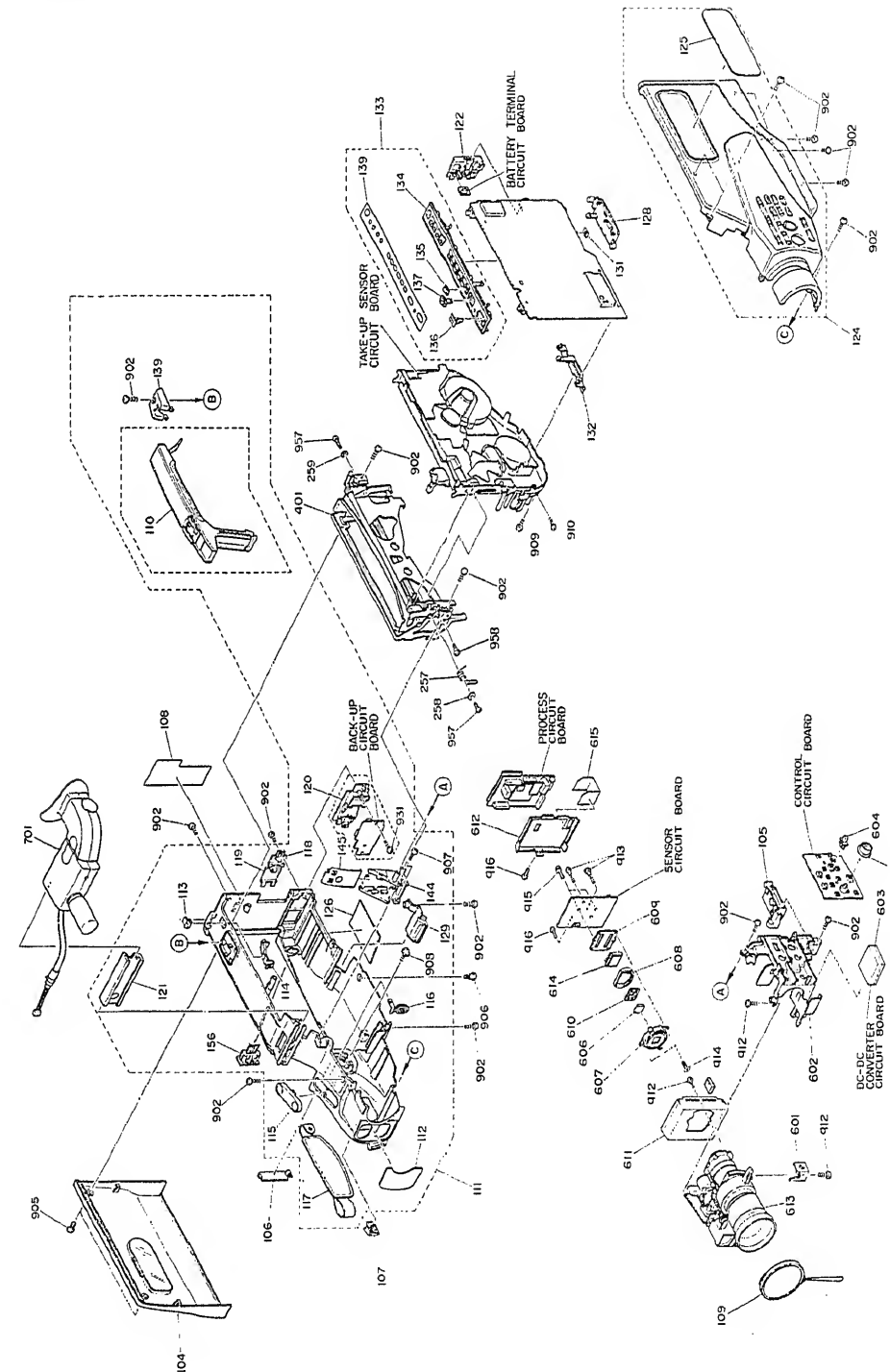
DC-DC CONVERTER SCHEMATIC (Reference)
GS/GS-KONVERTER-SCHALTPLAN (Referenz)



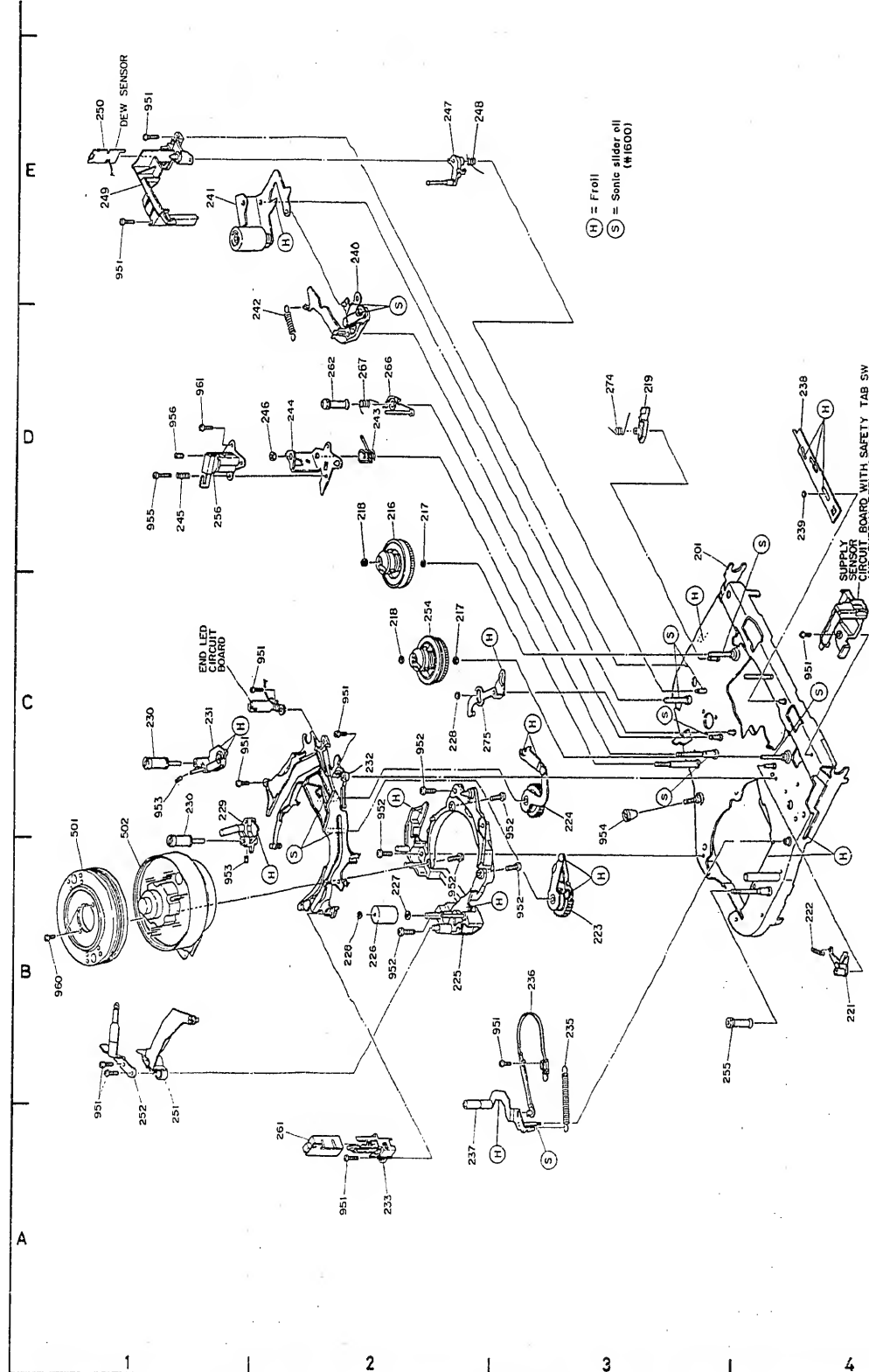
DC-DC CONVERTER P.C.B

CHAPTER 6 EXPLODED VIEWS
KAPITEL 6 EXPLOSIONSZEICHNUNGEN

CABINET SECTION
GEHÄUSEABSCHNITT



CHASSIS (UPPER) SECTION
CHASSIS-ABSCHNITT (OBERTEIL)



LUBRICATION

Lubrication points are shown in the exploded view diagrams by marks (S, F).

Lubricants shown in the diagram are as follows.

(S) Sonic slider oil (#1600)

(F) Froil (G31-SAY)

SCHMIERUNG

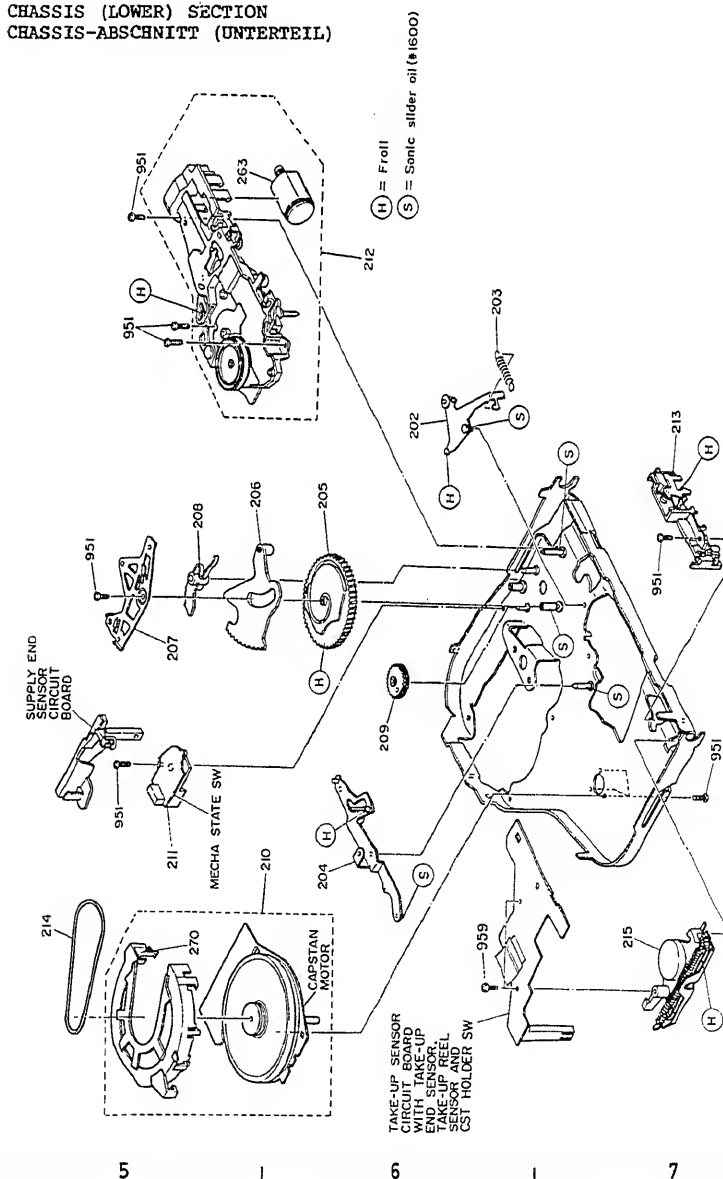
Die Schmierpunkte sind in den Explosionszeichnungen durch die Markierungen (S, F) angegeben.

Die folgenden Schmiermittel sind in den Diagrammen angegeben.

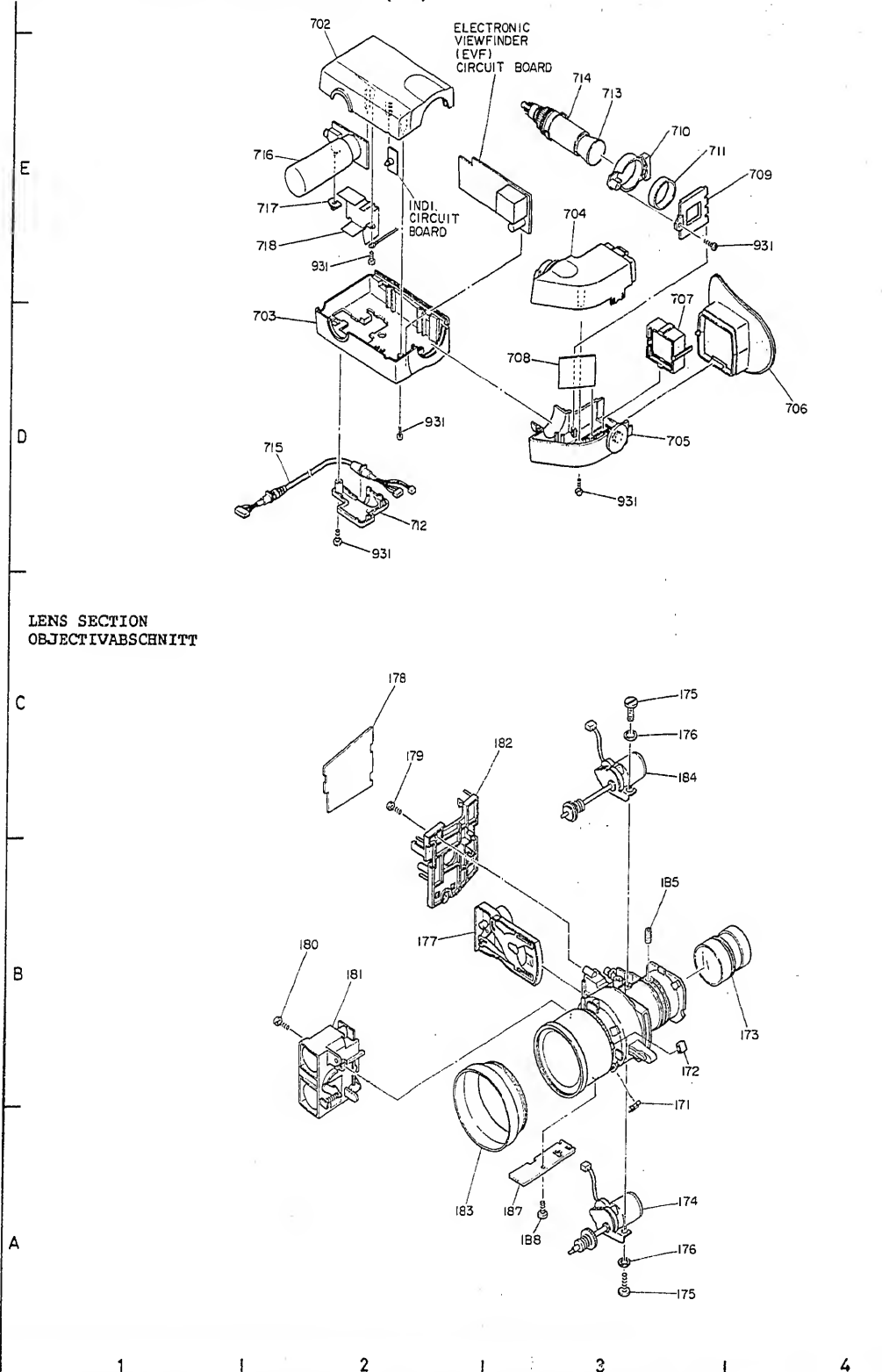
(S): Sonic slider oil (Nr. 1600)

(F): Froil (G31-SAY)

CHASSIS (LOWER) SECTION
CHASSIS-ABSCHNITT (UNTERTEIL)



ELECTRONIC VIEWFINDER (EVF) SECTION
ABSCHNITT DES ELEKTRONISCHEN SUCHERS (EVF)



CHAPTER 7 REPLACEMENT PARTS LIST

SYMBOL-NO	P-NO	DISCRIPTION
MECHANISM SECTION		
104	4722341	LID
105	6185351	FRAME, BOTTOM
106	4710596	LID
107	4710575	CAP, AF
109	6442881	CAP, HOOD
110	6336432	HANDLE
111	4712195	CASE (R)
112	6249883	CLEAR, AF
113	6070401	KNOB, BATT
114	6810451	LEVER, LOCK
115	4741091	BUTTON
116	4741081	BUTTON
117	6336422	STRAP
118	6487081	CAP, FUSE
119	6487071	CAP
120	6810712	HOLDER ASSY. BATTERY
121	6439787	SHOE, EVF
122	6017472	TERMINAL
124	4712016	CASE (L)
125	6442973	PAD
126	6442771	PAD
129	6810731	STRAP
132	6810681	HINGE, CBA
133	4741209	BUTTON
139	6336471	HOLDER
144	6336414	HOLDER, HANDLE
145	6528591	SPRING
156	5886751	SOCKET
171	6960491	STOPPER
172	6960492	RUBBER, STOPPER
173	6960493	LENS, REAR
174	6960494	MOTOR, ZOOM
175	6960495	SCREW (M1.7X4)
176	6960496	WASHER
177	6960497	IRIS BLOCK
178	1616651	PWB ASSY AUTO FOCUS
179	6960499	SCREW (M1.7X6)
180	6960501	SCREW (M2X5.5)
181	6960511	AUTO FOCUS BLOCK
182	6960512	FRMAE
183	6442761	HOOD, LENS
184	6960513	MOTOR, AUTO FOCUS
185	6960514	SCREW
201	7132982	CHASSIS
202	7469134	ARM, LOCK
203	6555792	SPRING
204	7469921	ARM, CAM
205	6440163	GEAR
206	6916111	GEAR
207	7449128	GUIDE
208	6805682	ARM, OPERATION
209	6440172	GEAR
210	5571791	MOTOR, CAPSTAN
211	5610821	SWITCH
212	6820584	BLOCK, LOADING
213	6806077	HOLDER
214	6356622	BELT
215	6806128	SLIDER
216	6887719	TABLE, REEL
219	6820551	BRAKE
221	6806322	BRAKE, SUB
222	6555814	SPRING
223	7448756	GEAR, LOADING

SYMBOL-NO	P-NO	DISCRIPTION
224	7448785	GEAR, LOADING
225	6916141	BASE, CYLINDER
226	6416091	ROLLER, IMPEDANCE
227	7786623	POLYSLIDER WASHER
228	7778859	POLYSLIDER WASHER
229	6916342	BASE, GUIDE ROLLER (IN)
230	6424741	ROLLER
231	6916363	BASE, GUIDE ROLLER (OUT)
232	6805665	PLATE, GUIDE
233	6806223	BASE, HEAD
235	6555823	SPRING
236	6820992	BAND, TENTION
237	7472871	ARM, TENTION
238	7448855	SLIDER
239	7778859	POLYSLIDER WASHER
240	7469942	LINK, PRESSER ROLLER
241	7469901	ARM, PRESSER ROLLER
242	6523244	SPRING
243	6551952	SPRING
244	7448933	ARM, HEAD
245	6523252	SPRING
246	7785673	NUT
247	6911697	ARM
248	6551961	SPRING
249	6806255	PLATE
250	0173062	DEW SENSOR
251	6820571	GUIDE
252	5793751	BRUSH
253	7472924	CASSETTE HOLDER AS
254	6894479	REEL, SUPPLY
255	4508237	GUIDE, TAPE
256	5443491	HEAD, AUDIO CONTROL
257	6550942	SPRING
258	7789931	WASHER
259	7789951	WASHER
261	5445872	HEAD, FULL ERASE
262	4508235	GUIDE
263	5579074	MOTOR, DC
266	6916122	ARM
267	6552507	SPRING
274	6552493	SPRING
275	7469951	ARM, OPERATION
501	5436274	CYLINDER, UPPER (CY-FPD-U)
502	5436372	CYLINDER, LOWER
601	6810821	PIECE, BOTTOM
602	6185331	FRAME, LENS
603	5274122	DC-DC CONVERTOR
604	4750222	KNOB
605	4750211	KNOB, IRIS
606	5783141	FILTER, QUARTZ CRYSTAL
607	6810151	LID SENSOR
608	6810161	GUIDE, SENSOR
609	4892682	PLATE
610	4790511	RUBBER
611	7498903	SHIELD PLATE
612	7499831	SHIELD
613	6960193	LENS, ZOOM
614	5318212	CCD IMAGE DEVICE (MN3745EC)
615	7499761	SHEET, SHIELD
702	4712082	CASE, UPPER
703	4712171	CASE, BOTTOM
704	4712101	UPPER NECK
705	4712181	BOTTOM NECK
706	6014322	CAP, EYE
707	6958292	LENS, EVF

SYMBOL-NO	P-NO	DISCRIPTION
708	4892171	MIRROR
709	6814931	COVER, CRT
710	6814921	HOLE, CRT
711	6597371	RUBBER, CRT
712	6810581	HOLE, CONNECTOR
713	5319012	PICTURE TUBE (M01KGG077WB)
714	5242026	DEFLECTION YOKE
715	5860601	CONNECTOR
716	5420832	MICROPHONE
717	6079411	KNOB, WIND SWITCH
902	8699308	SCREW (2.6X8) BLACK
905	7784782	SCREW (3X4)
906	7784373	SCREW
907	8691308	SCREW BT2, 6MMX8MM
908	7775901	SCREW
909	8741106	SCREW (2X6)
910	8741406	SCREW (3X6)
912	8691106	SCREW (2X6)
913	8612114	SCREW (2X14)
914	8741104	SCREW (2X4)
915	8652105	SCREW (PSW2X5)
916	8741103	SCREW (2X38)
931	8699106	SCREW (2X6)
951	8741106	SCREW (2X6)
952	8741408	SCREW (B3X8)
953	7782616	SCREW
954	6911101	SCREW
955	8741110	BIND SCREW-2MMX8 10MM
956	7782619	SCREW 2X5
957	8741109	SCREW
958	7784371	SCREW
959	8691106	SCREW (2X6)
960	7784131	SCREW (3X8)
961	8741104	SCREW (2X4)
ACCESSORIES SECTION		
4080101		OPERATING GUIDE
7743433		STRAP, HAND
4130771		ADAPTOR, AC
5858521		CORD, AV PERI
5852384		CORD, DC
5860591		CONNECTION CORD
4132851		PLUG
4134121		LIGHT, DC
VTR SECTION		
C 202	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 203	0209943	CERAMIC DISC 120PF+-5%
C 204	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 205	0209994	CERAMIC CHIP 0.33UF+80-20% 25V
C 206	0209994	CERAMIC CHIP 0.33UF+80-20% 25V
C 207	0209994	CERAMIC CHIP 0.33UF+80-20% 25V
C 209	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 210	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 211	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 212	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 213	0209930	CERAMIC CHIP 10PF+-0.5% 50V
C 214	0209941	CERAMIC DISC 82PF+-5%
C 216	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 217	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 218	0209941	CERAMIC DISC 82PF+-5%
C 219	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 221	0209994	CERAMIC CHIP 0.33UF+80-20% 25V
C 222	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 224	0209838	CERAMIC CHIP 0.01UF+-20% 50V

SYMBOL-NO	P-NO	DISCRIPTION
C 225	0209936	CERAMIC CHIP 33PF+-5% 50V
C 226	0209936	CERAMIC CHIP 33PF+-5% 50V
C 227	0209936	CERAMIC CHIP 33PF+-5% 50V
C 228	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 229	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 230	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 231	0209936	CERAMIC CHIP 33PF+-5% 50V
C 232	0209896	CERAMIC CHIP 47PF+-5% 50V
C 233	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 234	0209853	CERAMIC DISC 68PF+-5% 50V
C 238	0209855	CERAMIC CHIP 0.022UF+-20% 25V
C 245	0209852	CERAMIC CHIP 180PF+-5% 50V
C 247	0209895	CERAMIC CHIP 39PF+-5% 50V
C 249	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 250	0209934	CERAMIC CHIP 22PF+-5% 50V
C 251	0209941	CERAMIC DISC 82PF+-5%
C 252	0209934	CERAMIC CHIP 22PF+-5% 50V
C 254	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 258	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 260	0209974	CERAMIC CHIP 1000PF+-5% 50V
C 261	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 262	0209930	CERAMIC CHIP 10PF+-0.5% 50V
C 263	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 264	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 265	0209855	CERAMIC CHIP 0.022UF+-20% 25V
C 266	0209934	CERAMIC CHIP 22PF+-5% 50V
C 267	0209897	CERAMIC CHIP 56PF+-5% 50V
C 270	0209855	CERAMIC CHIP 0.022UF+-20% 25V
C 274	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 275	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 276	0209853	CERAMIC DISC 68PF+-5% 50V
C 277	0209905	CERAMIC CHIP 680PF+-5% 50V
C 282	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 290	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 291	0209936	CERAMIC CHIP 33PF+-5% 50V
C 292	0209934	CERAMIC CHIP 22PF+-5% 50V
C 293	0209974	CERAMIC CHIP 1000PF+-5% 50V
C 294	0209856	CERAMIC DISC 220PF+-5% 50V
C 295	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 296	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 298	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 299	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 300	0209848	CERAMIC DISC 150PF+-5% 50V
C 301	0209844	CERAMIC CHIP 0.0033UF+-10% 50V
C 302	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 303	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 304	0209868	CERAMIC CHIP 0.033UF+-10% 25V
C 306	0209856	CERAMIC DISC 220PF+-5% 50V
C 307	0209852	CERAMIC CHIP 180PF+-5% 50V
C 309	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 311	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 313	0209936	CERAMIC CHIP 33PF+-5% 50V
C 314	0209932	CERAMIC CHIP 15PF+-5% 50V
C 316	0209898	CERAMIC CHIP 100PF+-5% 50V
C 317	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 318	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 319	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 320	0209930	CERAMIC CHIP 10PF+-0.5% 50V
C 321	0209931	CERAMIC CHIP 12PF+-5% 50V
C 322	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 324	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 325	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 326	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 330	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 331	0209974	CERAMIC CHIP 1000PF+-5% 50V

SYMBOL-NO	P-NO	DISCRIPTION
C 336	0209897	CERAMIC CHIP 56PF+-5% 50V
C 337	0209853	CERAMIC DISC 68PF+-5% 50V
C 423	0204279	POLYPROPYLENE 0.022UF+-5% 10V
C 424	0204271	POLYESTER FILM 8200PF+-5% 100V
C 431	0209863	CERAMIC DISC 6800PF+-10% 50V
C 432	0209862	CERAMIC CHIP 4700PF+-10% 50V
C 433	0209863	CERAMIC DISC 6800PF+-10% 50V
C 434	0209850	CERAMIC DISC 0.015UF+-20% 50V
C 435	0209850	CERAMIC DISC 0.015UF+-20% 50V
C 437	0209850	CERAMIC DISC 0.015UF+-20% 50V
C 439	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 440	0209844	CERAMIC CHIP 0.0033UF+-10% 50V
C 441	0209862	CERAMIC CHIP 4700PF+-10% 50V
C 442	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 443	0209868	CERAMIC CHIP 0.033UF+-10% 25V
C 444	0209994	CERAMIC CHIP 0.33UF+-80-20% 25V
C 446	0209974	CERAMIC CHIP 1000PF+-5% 50V
C 449	0209856	CERAMIC DISC 220PF+-5% 50V
C 450	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 451	0209868	CERAMIC CHIP 0.033UF+-10% 25V
C 453	0209969	CERAMIC CHIP 0.1UF+-80-20% 25V
C 454	0209969	CERAMIC CHIP 0.1UF+-80-20% 25V
C 455	0209969	CERAMIC CHIP 0.1UF+-80-20% 25V
C 456	0209969	CERAMIC CHIP 0.1UF+-80-20% 25V
C 455	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 621	0209862	CERAMIC CHIP 4700PF+-10% 50V
C 631	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 632	0209869	CERAMIC DISC 0.047UF+-80-20% 25V
C 633	0201073	CERAMIC CHIP 0.068UF+-80-20% 25V
C 634	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 635	0209974	CERAMIC CHIP 1000PF+-5% 50V
C 636	0209974	CERAMIC CHIP 1000PF+-5% 50V
C 637	0209856	CERAMIC DISC 220PF+-5% 50V
C 638	0209974	CERAMIC CHIP 1000PF+-5% 50V
C 641	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 642	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 645	0209943	CERAMIC DISC 120PF+-5% 50V
C 911	0209934	CERAMIC CHIP 22PF+-5% 50V
C 912	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 913	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 914	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 916	0209934	CERAMIC CHIP 22PF+-5% 50V
C 917	0209934	CERAMIC CHIP 22PF+-5% 50V
C 918	0209969	CERAMIC CHIP 0.1UF+-80-20% 25V
C 919	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 921	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 922	0209869	CERAMIC DISC 0.047UF+-80-20% 25V
C 923	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 924	0209963	CERAMIC CHIP 0.22UF+-80-20% 16V
C 926	0209868	CERAMIC CHIP 0.033UF+-10% 25V
C 927	0209868	CERAMIC CHIP 0.033UF+-10% 25V
C 928	0209868	CERAMIC CHIP 0.033UF+-10% 25V
C 930	0209897	CERAMIC CHIP 56PF+-5% 50V
C 931	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 932	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 933	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 934	0209930	CERAMIC CHIP 10PF+-0.5% 50V
C 935	0209969	CERAMIC CHIP 0.1UF+-80-20% 25V
C 936	0209969	CERAMIC CHIP 0.1UF+-80-20% 25V
C 950	0209869	CERAMIC DISC 0.047UF+-80-20% 25V
R 201	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 202	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 203	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 204	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 205	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W

SYMBOL-NO	P-NO	DISCRIPTION
R 206	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 207	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 208	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 209	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R 210	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 211	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 212	0103865	CHIP RESISTOR 68KOHM+-5% 0.1W
R 213	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R 214	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 215	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 216	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 217	0103876	CHIP RESISTOR 560KOHM+-5% 0.1W
R 219	0103813	CHIP RESISTOR 3.3 OHM+-10% 0.1W
R 220	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 221	0103813	CHIP RESISTOR 3.3 OHM+-10% 0.1W
R 222	0103824	CHIP RESISTOR 27 OHM+-5% 0.1W
R 229	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R 230	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R 231	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R 232	0103839	CHIP RESISTOR 470KOHM+-5% 0.1W
R 233	0103839	CHIP RESISTOR 470KOHM+-5% 0.1W
R 234	0103839	CHIP RESISTOR 470KOHM+-5% 0.1W
R 235	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 236	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 237	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 238	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 239	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 240	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 241	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 242	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R 243	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 246	0103813	CHIP RESISTOR 3.3 OHM+-10% 0.1W
R 247	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W
R 248	0103813	CHIP RESISTOR 3.3 OHM+-10% 0.1W
R 249	0103875	CHIP RESISTOR 470KOHM+-5% 0.1W
R 250	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 251	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 252	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 253	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 254	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 255	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 256	0104262	CHIP RESISTOR 6.8KOHM+-1% 0.1W
R 257	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 258	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R 261	0104271	CHIP RESISTOR 15KOHM+-1% 1/10W
R 262	0104124	CHIP RESISTOR 12KOHM+-1% 1/10W
R 263	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 264	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 265	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 266	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W
R 270	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R 271	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 272	0103866	CHIP RESISTOR 82KOHM+-5% 0.1W
R 273	0103893	CHIP RESISTOR 75 OHM+-5% 1/8W
R 274	0103876	CHIP RESISTOR 560KOHM+-5% 0.1W
R 275	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 276	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 277	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 279	0103839	CHIP RESISTOR 470KOHM+-5% 0.1W
R 280	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 281	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 282	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R 283	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 284	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 285	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W

SYMBOL-NO	P-NO	DISCRIPTION
R 286	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 287	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R 288	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 289	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 290	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 291	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 292	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 294	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W
R 295	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 296	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 297	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R 298	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 299	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 300	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 301	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 303	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 304	0104262	CHIP RESISTOR 6.8KOHM+-1% 0.1W
R 305	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 309	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 311	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 312	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 401	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 402	0103865	CHIP RESISTOR 68KOHM+-5% 0.1W
R 403	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 404	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R 405	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 406	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 407	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R 408	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 409	0103873	CHIP RESISTOR 330KOHM+-5% 0.1W
R 410	0103833	CHIP RESISTOR 150 OHM+-5% 0.1W
R 411	0104271	CHIP RESISTOR 15KOHM+-1% 1/10W
R 412	0104124	CHIP RESISTOR 12KOHM+-1% 1/10W
R 413	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 414	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R 415	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 416	0103865	CHIP RESISTOR 68KOHM+-5% 0.1W
R 417	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 418	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 420	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 422	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 423	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 424	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 425	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 426	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 427	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 429	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R 430	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 431	0103866	CHIP RESISTOR 82KOHM+-5% 0.1W
R 432	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R 433	0104271	CHIP RESISTOR 15KOHM+-1% 1/10W
R 434	0103865	CHIP RESISTOR 68KOHM+-5% 0.1W
R 435	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 436	0103827	CHIP RESISTOR 47 OHM+-5% 0.1W
R 438	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 439	0104271	CHIP RESISTOR 15KOHM+-1% 1/10W
R 440	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 441	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 442	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 443	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 444	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 445	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 446	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R 447	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 448	0104124	CHIP RESISTOR 12KOHM+-1% 1/10W

SYMBOL-NO	P-NO	DISCRIPTION
R 449	0104262	CHIP RESISTOR 6.8KOHM+-1% 0.1W
R 450	0104262	CHIP RESISTOR 6.8KOHM+-1% 0.1W
R 451	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 452	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 453	0104271	CHIP RESISTOR 15KOHM+-1% 1/10W
R 454	0103869	CHIP RESISTOR 150KOHM+-5% 0.1W
R 455	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 456	0103864	CHIP RESISTOR 56KOHM+-5% 0.1W
R 458	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 459	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 460	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 461	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R 465	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 466	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 468	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 469	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 477	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 481	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 573	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 574	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 581	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R 582	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 583	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 584	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 585	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R 586	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R 590	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R 591	0104262	CHIP RESISTOR 6.8KOHM+-1% 0.1W
R 601	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 602	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 603	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 604	0103827	CHIP RESISTOR 47 OHM+-5% 0.1W
R 605	0103827	CHIP RESISTOR 47 OHM+-5% 0.1W
R 606	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 607	0104262	CHIP RESISTOR 6.8KOHM+-1% 0.1W
R 608	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R 609	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 610	0103878	CHIP RESISTOR 820KOHM+-5% 0.1W
R 611	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R 612	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 613	0103872	CHIP RESISTOR 270KOHM+-5% 0.1W
R 614	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 615	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 616	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R 617	0103876	CHIP RESISTOR 560KOHM+-5% 0.1W
R 618	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 619	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 620	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 621	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R 622	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 623	0103864	CHIP RESISTOR 56KOHM+-5% 0

SYMBOL-NO	P-NO	DISCRPTION
R 638	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 639	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 646	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 649	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 901	0104262	CHIP RESISTOR 6.8KOHM+-1% 0.1W
R 902	0104111	METAL FILM 10KOHM+-10% 1/10W
R 903	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R 904	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 905	0103873	CHIP RESISTOR 330KOHM+-5% 0.1W
R 906	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 907	0103827	CHIP RESISTOR 47 OHM+-5% 0.1W
R 908	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R 909	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 910	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 911	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 912	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 913	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 914	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 915	0104271	CHIP RESISTOR 15KOHM+-1% 1/10W
R 916	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 917	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 918	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R 919	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R 920	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 921	0104271	CHIP RESISTOR 15KOHM+-1% 1/10W
R 922	0104271	CHIP RESISTOR 15KOHM+-1% 1/10W
R 923	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 924	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 925	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 926	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 927	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 928	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 929	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 930	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W
R 931	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 932	0104111	METAL FILM 10KOHM+-10% 1/10W
R 933	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 934	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 935	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 936	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 937	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 939	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 940	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 941	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 942	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 943	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 944	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 945	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 946	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 947	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 948	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 949	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 950	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 951	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 952	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 953	0104111	METAL FILM 10KOHM+-10% 1/10W
R 954	0104111	METAL FILM 10KOHM+-10% 1/10W
R 955	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R 956	0103838	CHIP RESISTOR 390 OHM+-5% 0.1W
R 957	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 958	0103838	CHIP RESISTOR 390 OHM+-5% 0.1W
R 959	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 960	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R 961	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R 962	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W

SYMBOL-NO	P-NO	DISCRPTION
R 963	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R 964	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 965	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R 966	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 967	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R 968	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 969	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 970	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 971	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 972	0103833	CHIP RESISTOR 150 OHM+-5% 0.1W
R 973	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 974	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 975	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 976	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 979	0103839	CHIP RESISTOR 470KOHM+-5% 0.1W
R 980	0103839	CHIP RESISTOR 470KOHM+-5% 0.1W
R 981	0103839	CHIP RESISTOR 470KOHM+-5% 0.1W
R 985	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 986	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R 991	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 992	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 993	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 994	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 995	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 996	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
RT 201	5007432	SEMI VARIABLE 1KOHM
RT 202	5007434	SEMI VARIABLE 4.7KOHM
RT 402	5007438	SEMI VARIABLE 100KOHM
RT 601	5035052	SEMI VARIABLE 220KOHM
D 001	5380931	LED GL-450
D 202	5337411	DIODE HSM2838C
D 203	5337411	DIODE HSM2838C
D 204	5337411	DIODE HSM2838C
D 205	5337411	DIODE HSM2838C
D 206	5337411	DIODE HSM2838C
D 210	5337411	DIODE HSM2838C
D 235	5328381	DIODE MA153(MC)
D 401	5337411	DIODE HSM2838C
D 402	5328381	DIODE MA153(MC)
D 405	5337411	DIODE HSM2838C
D 407	5337411	DIODE HSM2838C
D 581	5331671	DIODE DS135D-FA3
D 582	5328302	DIODE MA151WA(MN)
D 585	5328381	DIODE MA153(MC)
D 591	5328302	DIODE MA151WA(MN)
D 592	5328302	DIODE MA151WA(MN)
D 594	5328302	DIODE MA151WA(MN)
D 601	5337411	DIODE HSM2838C
D 902	5328302	DIODE MA151WA(MN)
D 903	5337411	DIODE HSM2838C
D 904	5337411	DIODE HSM2838C
D 905	5328302	DIODE MA151WA(MN)
D 906	5337411	DIODE HSM2838C
D 908	5328381	DIODE MA153(MC)
D 910	5328302	DIODE MA151WA(MN)
D 911	5328302	DIODE MA151WA(MN)
D 912	5328302	DIODE MA151WA(MN)
D 919	5332542	DIODE A81-04F
D 999	5330133	DIODE IS2076 SI 100MHZ 250MW 5NS
IC 201	1341551	IC P2010
IC 202	1370642	IC HT4957A
IC 203	1342491	IC HA118023NT
IC 204	1350801	IC MM1002
IC 205	1361541	IC MSM7401RS
IC 206	1351071	IC NJM2228M

SYMBOL-NO	P-NO	DISCRPTION
IC 207	5366612	IC TA78L009AP
IC 208	1350411	IC NJM2235M
IC 401	5363323	IC XRA5114L
IC 402	5364201	IC UPC1513HA
IC 581	1372821	IC HT7188R
IC 582	1371982	IC HT7187A
IC 601	1351611	IC HD49741
IC 602	1360072	IC XRA6459P1
IC 901	1355343	IC HD404439A17
IC 902	1351601	IC MM1028BF
IC 903	1342131	IC UPD6145C
IC 904	1342423	IC MCT47805
IC 905	5307001	IC S-8052ALR-LF-S
IC 906	5300811	IC TA7291S
IC 907	1380301	PWB ASSY TROUBLE DET(BX7596F)
IC 908	5305822	IC SN7532F
Q 001	5324661	TRANSISTOR PT-483F1
Q 002	5333952	PHOTO TRANSISTOR ON2170LH
Q 003	5324661	TRANSISTOR PT-483F1
Q 004	5333391	TRANSISTOR NJL5161K
Q 201	5328973	TRANSISTOR 2SC2412K-BST
Q 202	5328973	TRANSISTOR 2SC2412K-BST
Q 203	5328973	TRANSISTOR 2SC2412K-BST
Q 206	5328796	TRANSISTOR XDC144EK
Q 207	1323081	TRANSISTOR 2SA1036K
Q 208	5328973	TRANSISTOR 2SC2412K-BST
Q 209	5326206	TRANSISTOR FMC2
Q 210	5328961	TRANSISTOR 2SA1037KERS
Q 211	5328973	TRANSISTOR 2SC2412K-BST
Q 212	5328973	TRANSISTOR 2SC2412K-BST
Q 213	5328961	TRANSISTOR 2SA1037KERS
Q 214	5328261	TRANSISTOR 2SA1052C(MC) MICRO PACKAGE
Q 215	5328261	TRANSISTOR 2SA1052C(MC) MICRO PACKAGE
Q 216	5328796	TRANSISTOR XDC144EK
Q 217	5328796	TRANSISTOR XDC144EK
Q 218	5328796	TRANSISTOR XDC144EK
Q 219	5328961	TRANSISTOR 2SA1037KERS
Q 220	5328973	TRANSISTOR 2SC2412K-BST
Q 221	5326201	TRANSISTOR FMC2
Q 223	5328796	TRANSISTOR XDC144EK
Q 224	5328973	TRANSISTOR 2SC2412K-BST
Q 225	5328973	TRANSISTOR 2SC2412K-BST
Q 226	5328796	TRANSISTOR XDC144EK
Q 227	5328961	TRANSISTOR 2SA1037KERS
Q 230	5328973	TRANSISTOR 2SC2412K-BST
Q 403	5328796	TRANSISTOR XDC144EK
Q 404	5328351	TRANSISTOR 2SD602R(WR)
Q 409	5328973	TRANSISTOR 2SC2412K-BST
Q 411	5328796	TRANSISTOR XDC144EK
Q 412	5328351	TRANSISTOR 2SD602R(WR)
Q 414	5328961	TRANSISTOR 2SA1037KERS
Q 415	5328973	TRANSISTOR 2SC2412K-BST
Q 416	5328973	TRANSISTOR 2SC2412K-BST
Q 421	5328973	TRANSISTOR 2SC2412K-BST
Q 422	5326201	TRANSISTOR FMC2
Q 581	5326206	TRANSISTOR FMC2
Q 582	5328961	TRANSISTOR 2SA1037KERS
Q 583	5327331	TRANSISTOR 2SB1240 (R)
Q 584	5327331	TRANSISTOR 2SB1240 (R)
Q 587	1321121	TRANSISTOR 2SD1758(R)
Q 597	5328973	TRANSISTOR 2SC2412K-BST
Q 601	5326206	TRANSISTOR FMC2
Q 602	5326201	TRANSISTOR FMC2
Q 901	5328961	TRANSISTOR 2SA1037KERS
Q 902	5328796	TRANSISTOR XDC144EK

SYMBOL-NO	P-NO	DISCRPTION
Q 904	5328973	TRANSISTOR 2SC2412K-BST
Q 906	5328961	TRANSISTOR 2SA1037KERS
Q 907	5328961	TRANSISTOR 2SA1037KERS
Q 908	5328796	TRANSISTOR XDC144EK
Q 909	1323081	TRANSISTOR 2SA1036K
Q 912	5328796	TRANSISTOR XDC144EK
Q 913	5328973	TRANSISTOR 2SC2412K-BST
Q 914	5328973	TRANSISTOR 2SC2412K-BST
Q 915	5328973	TRANSISTOR 2SC2412K-BST
Q 919	5321666	TRANSISTOR 2SC2021SE180MHZ 0.3W SILICO
ZD 201	5337011	DIODE MA3075L
ZD 403	5337011	DIODE MA3075L
ZD 581	5337011	DIODE MA3075L
ZD 901	5337012	DIODE MA3056M
ZD 905	5337011	DIODE MA3075L
T 401	5261422	TRANSFORMER, BIAS
T 402	5261422	COIL, BIAS
L 201	5159207	CHOKE COIL 100UH
L 202	5159207	CHOKE COIL 100UH
L 203	5159207	CHOKE COIL 100UH
L 204	5159198	CHOKE COIL 22UH
L 205	5152597	CHOKE COIL 18UH
L 206	5159212	CHOKE COIL 220UH
L 207	5159196	CHOKE COIL 15UH
L 208	5159207	CHOKE COIL 100UH
L 209	5159211	CHOKE COIL 180UH
L 210	5159207	CHOKE COIL 100UH
L 211	5159205	CHOKE COIL 68UH
L 212	5159205	CHOKE COIL 68UH
L 213	5159207	CHOKE COIL 100UH
L 214	5159201	CHOKE COIL 33UH
L 215	5159194	CHOKE COIL 10UH
L 216	5159196	CHOKE COIL 15UH
L 217	5152599	CHOKE COIL 27UH
L 218	5159211	CHOKE COIL 180UH
L 219	5159207	CHOKE COIL 100UH
L 220	5159207	CHOKE COIL 100UH
L 222	5159202	CHOKE COIL 39UH
L 223	5159201	CHOKE COIL 33UH
L 401	5152815	CHOKE COIL 22MF+-5%
L 402	5159111	CHOKE COIL 5600UH
L 403	5159207	CHOKE COIL 100UH
L 404	5159216	COIL, CHOKE 470UH
L 581	5121381	COIL 47UH
L 584	5121382	COIL 100UH
L 585	5121381	COIL 47UH
L 586	5121382	COIL 100UH
L 587	5121381	COIL 47UH
L 588	5121381	COIL 47UH
L 589	5121381	COIL 47UH
L 901	5159201	CHOKE COIL 33UH
L 902	5159202	CHOKE COIL 39UH
L 999	5121381	COIL 47UH
X 201	5784551	OSCILLATOR
CP 201	5163553	LC FILTER
CP 202	5163911	DELAY LINE
CP 203	5163932	FILTER
CP 204	5124133	TRAP COIL
CP 205	5162475	BAND PASS FILTER
CP 206	5163353	LC FILTER
CX 901	5778072	CRYSTAL
CX 902	5778231	CRYSTAL
DL 201	5786231	DELAY LINE
F 901	5721952	FUSE 2A
F 902	5721952	FUSE 2A

SYMBOL-NO	P-NO	DISCRIPTION
H 901	5659961	SOCKET
H 902	5659961	SOCKET
H 903	5659961	SOCKET
H 904	5659961	SOCKET
JK 403	5671882	MINI JACK
JK 901	5693501	JACK, DC
LED 901	5381001	LED SLR-3AURCS
QF 901	5721942	IC PROTECTOR PN20
S 001	5601822	SWITCH
S 002	5635331	SWITCH
S 401	5621551	SWITCH
S 901	5635115	SWITCH
S 902	5634884	SWITCH
S 903	5621731	SWITCH
S 904	5634884	SWITCH
S 905	5634884	SWITCH
S 906	5634884	SWITCH
S 907	5634884	SWITCH
S 908	5634884	SWITCH
S 910	5634884	SWITCH
S 911	5634884	SWITCH
S 912	5634884	SWITCH
S 913	5634884	SWITCH
CAMERA SECTION		
C 101	0201025	CERAMIC CHIP 39PF+-5% 50V
C 102	0202043	CERAMIC DISC 15PF+-5% 50V
C 103	0202043	CERAMIC DISC 15PF+-5% 50V
C 104	0201022	CERAMIC CHIP 15PF+-5% 50V
C 105	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 107	0201022	CERAMIC CHIP 15PF+-5% 50V
C 108	0201022	CERAMIC CHIP 15PF+-5% 50V
C 109	0201004	CERAMIC CHIP 0.0015UF+-20% 50V
C 110	0201004	CERAMIC CHIP 0.0015UF+-20% 50V
C 111	0202054	CERAMIC CHIP 100PF+-5% 50V
C 112	0256161	ELECTROLYTIC 22UF 6.3V
C 113	0256690	ELECTROLYTIC 10UF 16V
C 114	0202049	CERAMIC DISC 47PF+-5% 50V
C 115	0201055	CERAMIC CHIP 0.001UF+80-20% 50V
C 116	0201025	CERAMIC CHIP 33PF+-5% 50V
C 117	0201025	CERAMIC CHIP 33PF+-5% 50V
C 118	0201028	CERAMIC CHIP 56PF+-5% 50V
C 119	0201028	CERAMIC CHIP 56PF+-5% 50V
C 120	0201028	CERAMIC CHIP 56PF+-5% 50V
C 121	0201028	CERAMIC CHIP 56PF+-5% 50V
C 122	0201024	CERAMIC CHIP 27PF+-5% 50V
C 123	0201024	CERAMIC CHIP 27PF+-5% 50V
C 124	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 125	0201072	CERAMIC CHIP 0.047UF+80-20% 25V
C 126	0201063	CERAMIC CHIP 0.0068UF+-20% 50V
C 127	0201072	CERAMIC CHIP 0.047UF+80-20% 25V
C 128	0201072	CERAMIC CHIP 0.047UF+80-20% 25V
C 130	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 133	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 134	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 135	0256685	ELECTROLYTIC 1UF 50V
C 136	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 137	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 138	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 139	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 140	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 141	0256689	ELECTROLYTIC 10UF 6.3V
C 142	0202127	CERAMIC CHIP 0.01UF+80-20% 50V
C 143	0202054	CERAMIC CHIP 100PF+-5% 50V
C 144	0256689	ELECTROLYTIC 10UF 6.3V

SYMBOL-NO	P-NO	DISCRIPTION
C 145	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 146	0256689	ELECTROLYTIC 10UF 6.3V
C 147	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 148	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 149	0201026	CERAMIC CHIP 39PF+-5% 50V
C 151	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 153	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 154	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 155	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 157	0256161	ELECTROLYTIC 22UF 6.3V
C 158	0256161	ELECTROLYTIC 22UF 6.3V
C 159	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 160	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 161	0256161	ELECTROLYTIC 22UF 6.3V
C 163	0256843	ELECTROLYTIC 47UF 10V
C 165	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 170	0256161	ELECTROLYTIC 22UF 6.3V
C 171	0256689	ELECTROLYTIC 10UF 6.3V
C 172	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 174	0202054	CERAMIC CHIP 100PF+-5% 50V
C 175	0256685	ELECTROLYTIC 1UF 50V
C 176	0202054	CERAMIC CHIP 100PF+-5% 50V
C 181	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 182	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 201	0256161	ELECTROLYTIC 22UF 6.3V
C 203	0256160	ELECTROLYTIC 47UF 6.3V
C 204	0256156	ELECTROLYTIC 22UF 16V
C 205	0256708	ELECTROLYTIC 47UF 10V
C 206	0256160	ELECTROLYTIC 47UF 6.3V
C 207	0256156	ELECTROLYTIC 22UF 16V
C 208	0256161	ELECTROLYTIC 22UF 6.3V
C 209	0256754	ELECTROLYTIC 220UF 10V
C 211	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 212	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 213	0256784	ELECTROLYTIC 330UF 16V
C 215	0256151	ELECTROLYTIC 1UF 50V
C 216	0256784	ELECTROLYTIC 330UF 16V
C 217	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 227	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 228	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 229	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 230	0256687	ELECTROLYTIC 3.3UF 25V
C 231	0256151	ELECTROLYTIC 1UF 50V
C 232	0256168	ELECTROLYTIC 33UF 6.3V
C 239	0202048	CERAMIC DISC 39PF+-5% 50V
CT 101	5058561	TRIMMER 50PF
R 102	0104033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 103	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 104	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R 105	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 106	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 110	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 111	0104056	CHIP RESISTOR 27KOHM+-5% 1/16W
R 112	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R 113	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R 114	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R 115	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 116	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 117	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 118	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 119	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R 120	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R 122	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 123	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 124	0103839	CHIP RESISTOR 470OHM+-5% 0.1W

SYMBOL-NO	P-NO	DISCRIPTION
R 125	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R 126	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R 127	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 128	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 129	0103815	CHIP RESISTOR 4.7KOHM+-10% 0.1W
R 130	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 131	0103879	CHIP RESISTOR 1KOHM+-5% 0.1W
R 134	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 135	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 136	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R 137	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R 138	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 139	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 140	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 141	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 142	0104041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R 143	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 144	0104036	CHIP RESISTOR 820 OHM+-5% 1/16W
R 145	0104024	CHIP RESISTOR 100 OHM+-5% 1/16W
R 147	0104042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 148	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 149	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 150	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 151	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R 152	0104028	CHIP RESISTOR 220 OHM+-5% 1/16W
R 153	0104041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R 154	0104042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 155	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 156	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 157	0104043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R 158	0104043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R 159	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 160	0104044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 161	0104047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R 162	0104042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 163	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 170	0104047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R 171	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R 172	0104034	CHIP RESISTOR 560 OHM+-5% 1/16W
R 174	0104059	CHIP RESISTOR 56KOHM+-5% 1/16W
R 175	0103865	CHIP RESISTOR 68KOHM+-5% 0.1W
R 181	0104029	CHIP RESISTOR 270 OHM+-5% 1/16W
R 182	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 184	0104038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R 186	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R 187	0104048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 188	0104044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 195	0104017	CHIP RESISTOR 33 OHM+-5% 1/16W
R 197	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 201	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 203	0104048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 204	0104048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 205	0104048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 206	0104048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 207	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 208	0104046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 209	0104055	CHIP RESISTOR 22KOHM+-5% 1/16W
R 210	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 211	0104041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R 212	0104045	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R 214	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 215	0103828	CHIP RESISTOR 56 OHM+-5% 0.1W
R 217	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R 219	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 221	0103828	CHIP RESISTOR 56 OHM+-5% 0.1W

SYMBOL-NO	P-NO	DISCRIPTION
R 222	0104045	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R 224	0104047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R 226	0104021	CHIP RESISTOR 56 OHM+-5% 1/16W
R 227	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 228	0104058	CHIP RESISTOR 47KOHM+-5% 1/16W
R 229	0104083	CHIP RESISTOR 33KOHM+-5% 1/16W
R 230	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 231	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 232	0103879	CHIP RESISTOR 1MOM+-5% 0.1W
R 233	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 234	0104046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 235	0104038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R 236	0103869	CHIP RESISTOR 150KOHM+-5% 0.1W
R 237	0104053	CHIP RESISTOR 150KOHM+-5% 1/16W
R 238	0104039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R 239	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R 244	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 245	0104045	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R 246	0104039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R 248	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R 249	0104044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 250	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R 251	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R 252	0104058	CHIP RESISTOR 47KOHM+-5% 1/16W
R 253	0104028	CHIP RESISTOR 220 OHM+-5% 1/16W
R 254	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 255	0103877	CHIP RESISTOR 680KOHM+-5% 0.1W
R 256	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 260	0104054	CHIP RESISTOR 18KOHM+-5% 1/16W
R 262	0104072	CHIP RESISTOR 470KOHM+-5% 1/16W
R 263	0104067	CHIP RESISTOR 220KOHM+-5% 1/16W
R 264	0104073	CHIP RESISTOR 560KOHM+-5% 1/16W
R 265	0104021	CHIP RESISTOR 56 OHM+-5% 1/16W
R 266	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R 267	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 268	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 269	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R 271	0103864	CHIP RESISTOR 56KOHM+-5% 0.1W
R 401	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 402	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R 403	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 404	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 405	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 406	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 407	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R 408	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R 409	0103833	CHIP RESISTOR 150 OHM+-5% 0.1W
R 410	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 411	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 412	0103838	CHIP RESISTOR 390 OHM+-5% 0.1W
R 413	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 414	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R 415	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R 416	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 417	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R 418	0103855	CHIP RESISTOR 1

SYMBOL-NO	P-NO	DISCRIPTION
RV 401	5002014	VARIABLE 10KOHM
D 101	5328321	DIODE MA151K (MH)
D 102	5328301	DIODE MA151WK (MT)
D 103	5326021	DIODE MA160-MID
D 104	5328321	DIODE MA151K (MH)
D 105	5328321	DIODE MA151K (MH)
D 106	5328321	DIODE MA151K (MH)
D 201	5328321	DIODE MA151K (MH)
D 401	5381941	DIODE GL1PR111
IC 102	1351801	IC MNS128
IC 103	1350711	IC MNS107CS
IC 104	5305131	IC TC4SU69F
IC 105	1351581	IC HA118120
IC 106	1350611	IC MNS319S
IC 201	1372112	RESISTOR BLOCK R1911A
IC 202	1372257	IC HT5765F
IC 203	1379036	PWB ASSY HTS5806E
IC 204	5304141	IC HA118003MP
IC 205	1350261	IC NJW2225M
IC 206	5305131	IC TC4SU69F
IC 207	1354202	IC TC7S02F
Q 102	5326461	TRANSISTOR XN4501
Q 103	5328341	TRANSISTOR 2SD601Y (RS)
Q 104	5326991	TRANSISTOR 2SA1738 (Q/R)
Q 105	1323001	TRANSISTOR 2SC3757 (Q/R)
Q 106	5326991	TRANSISTOR 2SA1738 (Q/R)
Q 107	1323001	TRANSISTOR 2SC3757 (Q/R)
Q 108	5326991	TRANSISTOR 2SA1738 (Q/R)
Q 109	1323001	TRANSISTOR 2SC3757 (Q/R)
Q 110	5328251	TRANSISTOR 2SA1122-CD
Q 111	5328251	TRANSISTOR 2SA1122-CD
Q 112	5328192	TRANSISTOR 2SC2462LD
Q 113	5328192	TRANSISTOR 2SC2462LD
Q 114	5326461	TRANSISTOR XN4501
Q 115	5328251	TRANSISTOR 2SA1122-CD
Q 116	5328192	TRANSISTOR 2SC2462LD
Q 117	5328192	TRANSISTOR 2SC2462LD
Q 201	5326701	TRANSISTOR 1MT1
Q 202	5326701	TRANSISTOR 1MT1
Q 203	5326703	TRANSISTOR 1M21
Q 204	5328335	TRANSISTOR 2SB709A-RS-T
Q 205	5328335	TRANSISTOR 2SB709A-RS-T
Q 206	5328335	TRANSISTOR 2SB709A-RS-T
Q 207	5328797	TRANSISTOR XDA144EX
L 101	5152596	CHOKE COIL 15UH
L 102	5152607	CHOKE COIL 100UH+-10%
L 103	5152603	CHOKE COIL 47UH
L 104	5152596	CHOKE COIL 15UH
L 201	5152942	CHOKE COIL 220UH+-10%
L 202	5152612	CHOKE COIL 220UH
L 203	5152594	CHOKE COIL 100UH
X 101	5784731	DELAY LINE
CP 101	5165052	LC FILTER
CP 102	5172491	COIL TRAP
CP 103	5172043	FILTER, LOW PASS
CP 201	5172491	COIL TRAP
RM 201	5006414	SEMI VARIABLE BLOCK
SW 401	5634884	SWITCH
SW 402	5634884	SWITCH
SW 403	5634884	SWITCH
SW 404	5634884	SWITCH
SW 405	5634884	SWITCH
SW 406	5634884	SWITCH
SW 407	5634884	SWITCH
SW 408	5634884	SWITCH

SYMBOL-NO	P-NO	DISCRIPTION
SW 409	5635115	SWITCH
SW 410	5634933	SWITCH
SW 411	5634933	SWITCH
SW 412	5634884	SWITCH
SW 413	5634884	SWITCH
SW 414	5634884	SWITCH
SW 415	5621731	SWITCH
SW 416	5621731	SWITCH
ELECTRONIC VIEWFINDER SECTION		
C 803	0256155	ELECTROLYTIC 10UF 16V
C 808	0256752	ELECTROLYTIC 3.3UF 63V
C 809	0201997	CERAMIC DISC 0.1UF+80-20% 50V
C 810	0256155	ELECTROLYTIC 10UF 16V
C 811	0201037	CERAMIC CHIP 330PF+-5% 50V
C 812	0201997	CERAMIC DISC 0.1UF+80-20% 50V
C 814	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 817	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 818	0256685	ELECTROLYTIC 1UF 50V
C 819	0256151	ELECTROLYTIC 1UF 50V
R 801	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R 802	0103874	CHIP RESISTOR 390KOHM+-5% 0.1W
R 803	0103875	CHIP RESISTOR 470KOHM+-5% 0.1W
R 804	0103881	CHIP RESISTOR 2.2MOHM+-10% 0.1W
R 805	0103881	CHIP RESISTOR 2.2MOHM+-10% 0.1W
R 806	0103820	CHIP RESISTOR 120HM+-5% 0.1W
R 807	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 808	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 809	0103865	CHIP RESISTOR 68KOHM+-5% 0.1W
R 810	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 811	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 812	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 813	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 814	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 815	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 816	0103814	CHIP RESISTOR 3.9 OHM+-10% 0.1W
R 817	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 818	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 819	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R 820	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 821	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 822	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 826	0103876	CHIP RESISTOR 560KOHM+-5% 0.1W
RT 802	5007711	SEMI VARIABLE 470 OHM
RT 803	5007793	SEMI VARIABLE 2.2MOHM
RT 805	5007468	SEMI VARIABLE 1MOHM
D 801	5328321	DIODE MA151K (MH)
D 802	5337321	DIODE MA199
D 803	5380691	LED SLR34UR5
IC 801	1351631	IC HA118121FP
Q 801	1323131	TRANSISTOR 2SD968A (R/S)
Q 802	5328241	TRANSISTOR 2SC2463E (DE)
T 801	5240485	TRANSFORMER, FLYBACK
L 801	5152607	CHOKE COIL 100UH+-10%
L 802	5244011	COIL
CN 803	5828512	MINI CONNECTOR
CN 804	5886261	MINI CONNECTOR
CS 801	5886234	SOCKET, CRT



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